

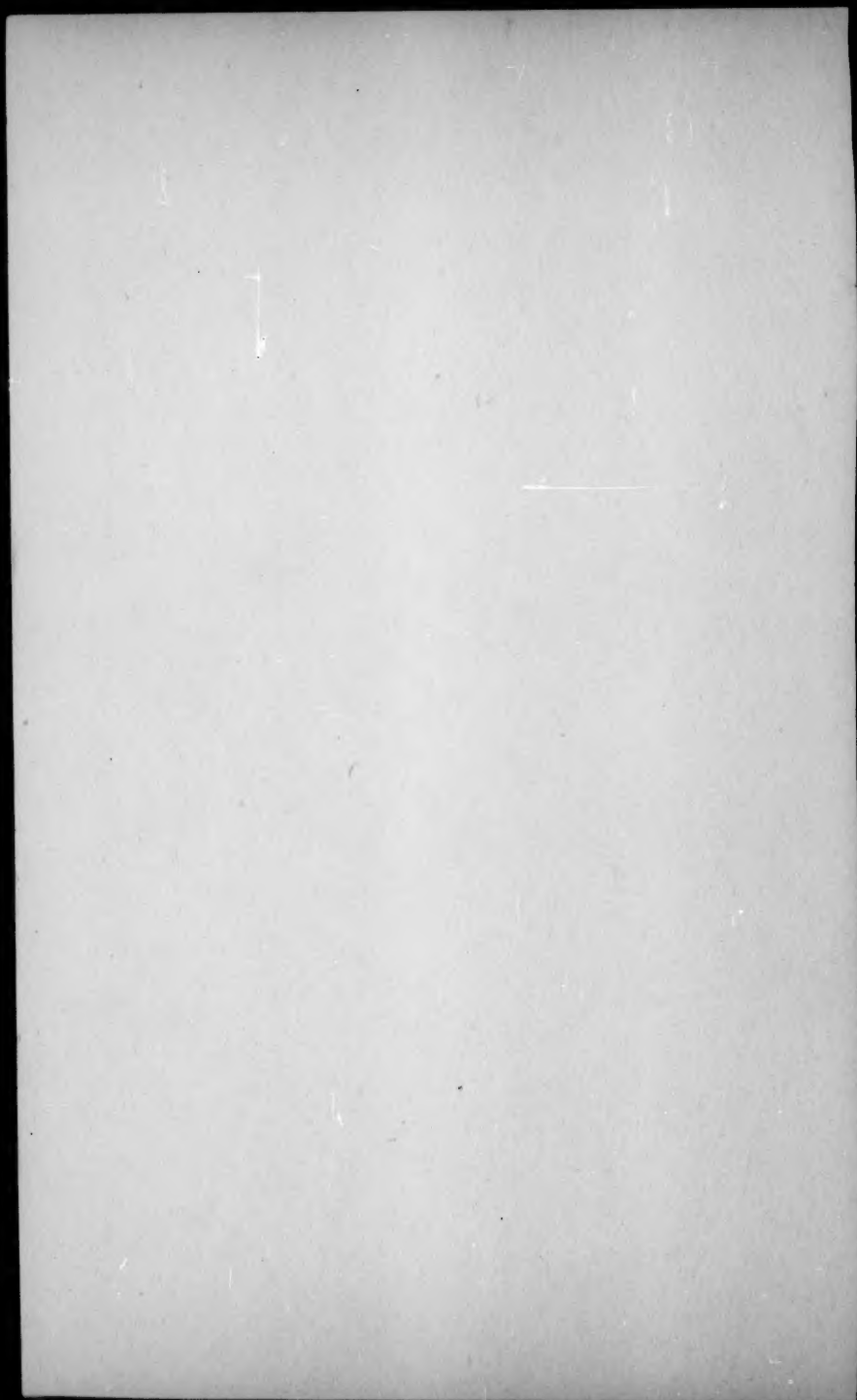
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PHYSIQUE AND REPUTATION OF JUNIOR HIGH SCHOOL BOYS¹

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A. INTRODUCTION: THE PROBLEM AND DESIGN OF THE STUDY

This study is concerned with the relationships between physique and reputation in adolescent boys. Research in constitutional psychology usually has utilized either personality tests or experts' ratings to get at the psychological variables presumed to be associated with physique. These tests may be of questionable validity, and experts' ratings have frequently been biased by knowledge of the hypotheses being tested. Sociometric ratings, on the other hand, supplied by people who know the subjects through frequent, everyday contact, yield valid estimates not contaminated by knowledge of the hypotheses under study (see Brunswik (2), Sears (7), and Stephenson (10)).

Our study was designed to test hypotheses that certain sociometrically derived reputation traits (selected in each instance by reference to Sheldon's Temperament Scale (9)) of junior high school boys would be found to correlate significantly with components of their mature somatotypes.

Sheldon studied young men aged 16 to 20 years (8). The present research used somatotypes of 18-year-old males on whose reputations data were collected in junior high school, the latest age level available. In predicting that certain selected reputation traits and mature somatotype components would correlate in directions congruent with Sheldon's results, it was anticipated that the size of the coefficients would be smaller than those he reports since: (a) a time span of four or five years existed between our two sets of data, (b) factors other than temperament affect reputation, and (c) halo-effect due to hypothesis-contamination may be presumed to be absent.

¹ The basic data of this research came from the Guidance and the Adolescent Growth Studies of the Institute of Child Welfare, made available by Jean Walker Macfarlane and Harold E. Jones. Acknowledgment is due also to the helpful guidance of Read D. Tuddenham.

The sociometric data were collected by L. Smith, C. Tryon, and M. C. Jones under grants-in-aid from the Laura Spelman Fund and the General Education Board. The somatotype data were secured by E. Radsliff, Dr. A. Schaefer, and Dr. H. R. Stolz. The analyses of the somatotype data were made under the direction of R. D. Tuddenham with the assistance of A. Pearl, S. Gibbens, and J. Bloomenkrantz under a grant-in-aid from the U.S. Public Health Service.

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In testing these hypotheses, the reputation traits described by scores on antipodal items of "Guess Who" tests (4) given to two different groups first were chosen on the basis of content similarities as probably reflecting variables appearing on the Temperament Scale. Traits so selected were then correlated with the proper somatotype components. The test items were not identical for the two groups, some being common to both tests and a number existing only in one test or the other. The data from these two groups were kept separate in the analysis. Group I is composed of boys from the Guidance Research Study (6),² Group II of boys from the Adolescent Growth Study (5).³ Both will be considered at greater length in later sections of this report.

B. PROCEDURES AND RESULTS

Subjects. Group I was composed of the 38 white boys in the Guidance Study (6) for whom junior high school reputation tests and mature somatotypes were available. The photographic negatives used in somatotyping these subjects were taken when they were skeletally mature, or nearly so. In this respect our group is probably more homogeneous than that studied by Sheldon. The chronological ages of his subjects ranged from 16 to 20 years; all but one (aged 21) of ours fall into this range.

Group II was made up of the 84 boys in the Adolescent Growth Study (5) on whom junior high school reputation tests and mature somatotypes had been obtained.

Somatotypes. A Sheldon somatotype (8) is a number composed of three ratings, each on a seven-point scale, the first digit referring to amount of endomorphy, the second to mesomorphy, and the third to ectomorphy. An extremely fat person would be a 7-1-1; an extremely muscular person a 1-7-1; and an extremely thin person a 1-1-7.

The somatotypes for Group I were obtained by use of a procedure like Sheldon's "machine" method (8). Our technique secured a total somatotype which best fitted 17 photographic diameters. A full description of the process may be found in an unpublished manuscript of the Guidance Study (12).

Group II somatotypes were supplied from the Adolescent Growth Study files. These were originally made by W. H. Sheldon from inspection of body photographs at ages 17 to 18. The means of the somatotype distributions for this sample are shown in Table I together with those from Group I and Sheldon's college sample.

² A longitudinal investigation of normal children in Berkeley, California, begun in 1928.

³ A longitudinal investigation begun in 1931 of some 200 children in the Oakland, California, public schools.

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TABLE I

MEANS OF SOMATOTYPE COMPONENTS FOR SHELTON SAMPLE,
GROUP I, AND GROUP II

Groups	M E A N S		
	Endomorphy	Mesomorphy	Ectomorphy
Sheldon	3.20	3.77	3.53
Group I	2.87	3.87	3.54
Group II	2.67	4.16	3.78

Reputation Scores. Reputation trait scores for both groups were based upon the same kinds of raw scores, each of these being obtained by adding algebraically the number of positive and negative mentions received by a subject on a trait. In the present study traits were so defined that a high positive score was predicted to go with a high rating on the somatotype component involved.

The reliability of the Reputation Test scores used earlier for these two groups has been reported by Tryon (11) and Tuddenham (13). Traits which "permeate the spontaneous thinking of the judges and the tangibility of the trait" (11) show greater reliability than those more remote in the psychological life space of the judges. Low reliability in a trait operates, of course, to reduce any correlation with that trait.

To secure a list of reputation traits which might be expected to correlate with physique components, the content of each trait in the Reputation Tests was inspected to determine if it reflected the operation of variables which might be related to items on the Temperament Scale.⁴ If the reputation trait seemed promising on this basis, it was predicted that the trait would correlate with the component of physique associated with the Temperament Scale items. The reputation trait, "Takes Chances," for example, appeared to involve the Temperament Scale item S-6; "Love of Risk and Chance,"⁵ a somatotonic variable. Since Sheldon reports a correlation between somatonia and mesomorphy of around .80 (similar *r*'s were reported between viscerotonia and endomorphy, and between cerebrotonia and ectomorphy), it was predicted that mesomorphy and "Takes Chances" would correlate positively. When this technique was applied to each of the traits in the study, the majority were found to involve potential relationships to somatotype components.

⁴ This scale with a full description of each variable may be found in Sheldon (9).

⁵ The 60 items on the Temperament Scale are arranged on three dimensions: 20 on V (for Viscerotonia), 20 on S (for Somatonia), and 20 on C (for Cerebrotonia). S-6, therefore, is the sixth item on the Somatonia dimension.

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"Guess Who" tests were given to Group I in the spring of 1941 when the subjects were in different classes in junior high school. Ten different rating groups were used. The size and grade level of each group, together with the number of subjects whose ratings are used in the study, are shown in Table II.

TABLE II
NUMBER OF SUBJECTS AND RATERS IN THE DIFFERENT
CLASSROOMS, GROUP I

<i>Grade Level</i>	<i>Number of Raters</i>	<i>Subjects Present</i>
L7	111	2
L7	130	1
L7	132	9
H7	143	5
H7	189	4
H7	227	9
L8	95	3
L8	125	3
H8	39	1
H8	180	1

Since the reputation scores were obtained from different groups of raters, the question arose as to how scores could be compared. One method of handling this difficulty would have involved computing the scores of every child in every rating group, then standardizing these scores within each group. Thus, on Trait X, a boy in Group A ($N=39$) might have the same standard score as a boy in Group B ($N=227$), although the number of mentions each child received might differ greatly. In this particular instance it would have been necessary to score and standardize some 1575 reputations. The procedure was prohibitively expensive.

It was questionable whether such an undertaking was necessary, especially since many of the results would be cross-validated via Group II where the rating groups were more nearly of a size. In the present case, when the number of mentions given subjects was correlated with the size of the rating groups, it was found that there was no significant relationship between the variables, $r = -.098$.⁶ On these grounds, therefore, it was decided to compare the raw scores directly for Group I.

Group II reputation scores come from "Guess Who" tests given to the Adolescent Growth Study group in the spring of 1934 in a public junior

⁶ Based on the 38 Group I boys. For the entire Guidance Study at this age level, number of mentions received and size of rating group correlate $-.115$ in a sample of 101 boys and girls.

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high school in Oakland, California. The children were rated in five upper seventh and four lower eighth grade classrooms. Tryon (11) has described the administration of the "Guess Who" test to the entire Adolescent Growth Study sample when the children were one grade lower (1933). The procedure of testing at the grade level used here was exactly the same, each child being rated in a classroom of about 40 children. Since mature somatotypes were not available on all of the Growth Study boys, Group II is smaller than Tryon's.

The Group II reputation scores which were obtained for each trait by adding the "plus" and "minus" mentions were transformed into scale scores during the course of the Adolescent Growth Study. In this scale a score of 50 indicated either no mentions or an equal number of "pluses" and "minuses." The most extreme positive score received a scale score of 80, i.e., plus 3 *SD*, while the most extreme negative score received a scale score of 20, i.e., minus 3 *SD*. In testing the predictions, these scale scores were correlated with the appropriate somatotype dimensions. It is convenient in presenting the results of the present study to reverse trait names when necessary to conform to the convention of phrasing all predicted relationships as positive correlations between reputation and physique variables. Thus, in the case of the Adolescent Growth Study reputation trait, "Talkative-Silent," where high scores indicated "Talkative" boys and low scores "Silent" boys, it was predicted that the latter would be higher in ectomorphy than the former, i.e., the trait dimension, "Silent-Talkative," would correlate positively with ectomorphy. This prediction was tested by correlating the "Talkative-Silent" scores with ectomorphy scores and changing the sign of the obtained correlation coefficient. "Talkative," for example, correlated $-.114$ with ectomorphy; hence, the correlation between "Silent" and ectomorphy was $.114$.

Predictions. There was a total of 45 questions in the Group I reputation test,⁷ four applying exclusively to girls and one which gave a measure of the friendships in the classes. The remaining 40 questions defined 20 reputation traits, 14 of which were judged by the method previously described to involve potential relationships to the variables on the Temperament Scale. Eleven of these 14 had varying degrees of similarity to traits studied in Group II.

The Group II reputation test also contained 45 questions,⁸ 40 of which defined 20 bipolar reputation traits. Fifteen of these seemed related to Temperament Scale variables. The predictions regarding these traits were arrived at exactly as for Group I, but the procedure was simplified somewhat, since some of these traits were similar to Group I traits and the same predictions could be made. Table III lists the traits expected to correlate with *meso-*

⁷ The complete list of questions may be found at the end of the article.

⁸ The questions are given in Tryon (11).

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morphy because of the operation of somatotonic variables; Table IV presents the traits expected to correlate with *ectomorphy* because of the operation of cerebrotonic variables. One additional prediction was made. Since

TABLE III
MESOMORPHIC REPUTATION TRAITS: ASSOCIATED SOMATOTONIC
VARIABLES AND RESULTS

P R E D I C T I O N S			R E S U L T S	
			(r with mesomorphy)	
			N = 38	N = 84
Group I Traits	Group II Traits	Somatotonic Variables	Group I	Group II
Wiggly	Restless	S-4, Need and Enjoyment of Exercise; S-11, Claustrophobia; S-19, Need of Action when Troubled	.172 ($p^* = .147$)	.104 ($p = .170$)
Takes-Chances	Daring	S-6, Love of Risk and Chance	.405 ($p = .007$)	.448 ($p = .001$)
Bossy	Bossy	S-5, Love of Dominating	-.018 ($p = .456$)	.370 ($p = .001$)
Good-at-Games	Active-in-Games	S-2, Love of Physical Adventure; S-8, Physical Courage; S-9, Competitive Aggressiveness; and S-4	.477 ($p = .002$)	.453 ($p = .001$)
Leader	Leader	S-4, S-5, and S-9	.272 ($p = .048$)	.356 ($p = .001$)
Not-Docile-with-Adults	.....	S-5	-.036 ($p = .413$)	.....
Real-Boy	.....	S-20, Orientation toward Goals and Activities of Youth	.474 ($p = .002$)	.....
.....	Fights	S-2, S-5, and S-8	.....	.415 ($p = .001$)
.....	Grown-Up	S-16, Overmaturity of Appearance	.....	.194 ($p = .039$)

* Probability taking *sign* of the coefficient into account; the probability when sign is ignored is twice the value shown.

"Bossy—Not-bossy" seems related to both somatonia and cerebrotonia, it was felt that both mesomorphy and ectomorphy might be involved; hence, the "Bossy" scores were expected to correlate positively with scores obtained by subtracting ectomorphy from mesomorphy.

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Since none of the reputation traits seemed to involve variables from the viscerotonia dimension of the Temperament Scale, no predictions were made regarding endomorphy. This appeared due in part to the lack of

TABLE IV
ECTOMORPHIC REPUTATION TRAITS: ASSOCIATED CEREBROTONIC
VARIABLES AND RESULTS

P R E D I C T I O N S			R E S U L T S	
			(r with ectomorphy)	
			N = 38	N = 84
Group I Traits	Group II Traits	Cerebrotonic Variables	Group I	Group II
Serious	Unhappy	C-5, Mental Overintensity; C-6, Secretiveness of Feel- ing; C-8, Sociophobia;	.243 ($p^* = .069$)	.256 ($p = .010$)
.....	Listless	C-9, Inhibited Social Ad- dress; C-17, Introversion	....	.122 ($p = .134$)
Bashful	Embarrassed- before-Class	C-8, C-9	.280 ($p = .044$)	.055 ($p = .374$)
.....	Shy-before- Adults		....	.068 ($p = .344$)
Not-Bossy	Submissive	C-6, C-8, C-9, C-17	.036 ($p = .413$)	.205 ($p = .031$)
Doesn't- Show-Off	Non-Atten- tion-Getting	C-4, Love of Privacy; C-13, Vocal Restraint; C-8, C-17	.217 ($p = .093$)	-.068 ($p = .268$)
Unfriendly	Unfriendly	C-8, C-9	.153 ($p = .176$)	.285 ($p = .005$)
Doesn't- Argue	Silent	C-6, C-8, C-13	.169 ($p = .151$)	.114 ($p = .149$)
Untidy	Unkempt	C-10, Resistance to Habit	-.262 ($p = .055$)	-.059 ($p = .295$)
Not-Quarrel- some	.....	C-5, C-6, C-8, C-9, C-17, and C-19, Need of Solitude when Troubled	.348 ($p = .017$)	....

* Probability taking *sign* of the coefficient into account; the probability when sign is ignored is twice the value shown.

pertinent Reputation Test questions associated with viscerotonic variables. In addition, both viscerotonia and somatotonia are "extrovert" dimensions, while cerebrotonia is "introvert." When reputation traits involved an introversion-extroversion dimension, it was simplest to make the prediction in

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terms of cerebrotonia, since a low score on this dimension results in high scores on one or both of the others. This accounts for the many predictions relating to ectomorphy. The remaining traits referred to assertive, athletic extroversion, i.e., "Leader," "Takes-Chances," etc. Both viscerotonia and cerebrotonia were expected to correlate negatively with these traits, while somatotonia was expected to provide positive correlations. Here it was simplest to make predictions in terms of mesomorphy. Predictions regarding endomorphy would have been difficult to test, since both groups are appreciably lower in that component than Sheldon's sample (Table I).

Results. Tables III and IV show the physique and reputation variables for Groups I and II with the product-moment correlation coefficients obtained between them. The significance of the coefficients was determined by using the standard error of a zero r and the tables of normal probability. Since a negative coefficient, however statistically significant, would not support the hypothesis, a "one-tailed" interpretation of the probabilities, taking the *sign* of the r into account, was made.

The results from correlating "Bossy" with scores obtained by subtracting ectomorphy from mesomorphy were:

Group I: $r = -.001$, $p = .499$

Group II: $r = .304$, $p = .003$

C. DISCUSSION

The evidence elicited in this study indicates that several relationships exist between physique and reputation which are congruent with those between physique and temperament reported by W. H. Sheldon. The predictions regarding traits related to mesomorphy yielded correlation coefficients larger than those found for ectomorphy. The former will be described first.

The traits "Wiggly" (Group I) and "Restless" (Group II) correlated .17 and .10, respectively, with mesomorphy. Neither coefficient, however, is statistically significant.

"Takes Chances" (Group I) and "Daring" (Group II) correlated .40 and .45, respectively, with mesomorphy, both coefficients being significant at the 1 per cent level. It is interesting to notice that the coefficients are similar in size, although the samples differ considerably in this respect.

"Leader" correlated with mesomorphy in the predicted direction in both groups, the r 's being .27 in Group I and .36 in Group II. The former coefficient is significant at the 5 per cent and the latter at the 1 per cent level, indicating a small positive relationship between these variables in the population sampled.

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"Good-at-Games" (Group I) and "Active-in-Games" (Group II) correlated as predicted with mesomorphy. Coefficients similar in size and sign (.48 and .45) were obtained, both being significant at the 1 per cent level.

It was predicted that "Not-Docile-with-Adults" would correlate positively with mesomorphy, but the obtained coefficient was virtually zero ($-.04$). Since this reputation trait appeared only on the Group I test, no cross-validation was possible. The same consideration applies to the Group I trait, "Real-Boy," which correlated .47 with mesomorphy. This r , significant at the 1 per cent level, is in the predicted direction.

Two traits appearing only on the Group II reputation test were expected to correlate positively with mesomorphy. These were "Fights" and "Grown-up"; their correlations with mesomorphy were .42 and .19, respectively, the first coefficient being significant at the 1 per cent and the second at the 5 per cent level.

Three predictions were made concerning "Bossy" and its converse, "Submissive," a trait which appeared on both reputation tests. It was expected to correlate positively with mesomorphy, negatively with ectomorphy, and positively with mesomorphy-minus-ectomorphy. The Group I data gave virtually zero correlations when these predictions were tested, but in Group II "Bossy" correlated .37 with mesomorphy, $-.20$ with ectomorphy (equivalent to a .20 correlation between ectomorphy and "Submissive"), and .30 with mesomorphy-minus-ectomorphy, the second coefficient being significant at the 5 per cent level and the others at the 1 per cent level. Group II is appreciably larger than Group I; hence, more reliance probably should be placed on results from the former sample.

The ectomorphic traits yielded several correlations in keeping with the predictions, but the coefficients generally were smaller than those described above. "Serious" (Group I) and "Unhappy" and "Listless" (both from Group II) correlated .24, .26, and .12, respectively, with ectomorphy, the second coefficient being significant at the 1 per cent level.

"Bashful" (Group I), "Embarrassed-before-Class," and "Shy-before-Adults" (both from Group II) were expected to correlate positively with ectomorphy, but the obtained r 's of .28, .06, and .07, only the first being significant at the 5 per cent level, indicate that there probably is little relationship between shyness and ectomorphy. The results, however, might be more favorable to the hypothesis if the Group II traits had been more like "Bashful" in content.

"Doesn't-Show-Off" (Group I) and "Non-Attention-Getting" (Group II) failed to correlate significantly with ectomorphy, the r 's being .22 and $-.07$.

It was predicted that "Unfriendly" in both groups would correlate positively with ectomorphy. Coefficients of .15 and .28, the latter significant at the 1 per cent level, probably reflect a small positive association between these variables in our population.

Since "Doesn't-Argue" (Group I) and "Silent" (Group II) appeared to

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involve verbal fluency, it was predicted that both would correlate with ectomorphy. The coefficients, however, were small (.17 and .11) and statistically insignificant.

It was predicted that "Untidy" (Group I) and "Unkempt" (Group II) would correlate positively with ectomorphy. The r 's were $-.26$ and $-.06$, respectively, indicating a reversal of the prediction. Only the first r , however, is significant (5 per cent level), and it is probable that the variables are not correlated in the population.

One Group I trait, "Not-Quarrelsome," not duplicated in Group II, was expected to correlate with ectomorphy. An r of .35, significant very near the 1 per cent level, was obtained, but in generalizing to the population the small size of this sample must be kept in mind.

In summing up these results, it may be said that our findings on the relationships between physique and reputation seem generally congruent with Sheldon's regarding physique and temperament. It should be emphasized, however, that the data of this study do not show correlations nearly as large as those he reports. This was anticipated in view of the multitude of factors other than temperament which influence reputation; consequently, the small size of these coefficients in itself does not demonstrate a lack of validity in his results. On the other hand, the reputation judges were not influenced by the halo-effect stemming from knowledge of Sheldon's hypotheses,⁹ and our findings may give a better picture than do his of the degree of association between physique and personality in our culture.

It is possible to "explain" these data as arising from genetic differences which affect both physique and personality. Such an explanation is the sort Sheldon seems to make. On the other hand, it has been pointed out that such results are as easily explained on other grounds (1). The highest correlations in this study were obtained between mesomorphy and variables which, taken together, describe a type of "all-American boy," variables such as "Daring," "Good-at-Games," etc. Other things being equal, it should be expected that a boy with superior muscular equipment would excel in these high prestige traits and thereby gain greater social rewards than would the punier lads. The latter, being relatively deficient in athletic talent, might in some cases react with symptoms of unhappiness, becoming "Sad," "Silent," and "Unfriendly." The ability to excel in games, however, depends only partially on musculature; thus, correlations between mesomorphy and the "all-American" variables are less than unity. Furthermore, not all boys who are poor in athletics will respond by becoming unsocial; hence, the correlations between physique and "withdrawal" variables are lower than those between physique and "activity" variables.

⁹ There exists, of course, the possibility that a stereotype, equivalent to a vulgar version of Sheldon's hypothesis, affected the ratings of the reputation judges. Such a factor would tend to produce correlations similar in pattern to those Sheldon reports. It is sufficient for our purposes in this study that the reputation tests, as Tryon (11) points out, are "measures of the environment of opinion in which (a child) lives."

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D. SUMMARY

1. Two groups of boys were studied to determine if correlations between their junior high school Reputation Test scores and components of their mature somatotypes were congruent with Sheldon's findings regarding the relationships between his Temperament Scale and physique.

2. Group I was composed of 38 boys from the Guidance Study. Each bipolar reputation trait measured by scores on a "Guess Who" test was examined to discover which, if any, of the variables on the Temperament Scale might be related. Each trait for which a dimension of temperament presumably was involved was predicted to correlate significantly with the physique component Sheldon had reported as associated with the temperament dimension. Of the 20 reputation traits examined in this section, 14 appeared to have possible relationships to temperament and, therefore, to physique. Eleven of this number possessed varying degrees of similarity to traits in Group II. Correlation coefficients were computed to test the predictions. Coefficients significant at the 1 per cent level of confidence were found between "Takes-Chances" and mesomorphy, "Good-at-Games" and mesomorphy, and "Real-Boy" and mesomorphy. Coefficients significant at the 5 per cent level were found between "Bashful" and ectomorphy, "Leader" and mesomorphy, "Not-Quarrelsome" and ectomorphy. In four of the 14 cases reversals of the predictions were found, the signs of the coefficients being negative although positive correlations had been expected. Three of these were virtually zero ("Bossy"—mesomorphy, "Bossy"—mesomorphy-minus-ectomorphy, and "Not-Docile"—mesomorphy), but the fourth ("Untidy"—ectomorphy) was significant at the 5 per cent level of confidence.

3. Group II consisted of 84 Adolescent Growth Study boys. The procedures were the same as those used with Group I. Of 20 bipolar reputation traits, 15 were found to possess possible relationships to variables on the Temperament Scale. Predictions for these traits were made as described above, the similarity of 13 traits to traits used with Group I making possible cross-validation of relationships involving these items. Correlation coefficients were computed to test the predictions regarding traits and components of physique. Coefficients significant at the 1 per cent level of confidence were found between "Unhappy" and ectomorphy, "Daring" and mesomorphy, "Bossy" and mesomorphy, "Bossy" and mesomorphy-minus-ectomorphy, "Active-in-Games" and mesomorphy. Coefficients significant at the 5 per cent level were found between "Submissive" and ectomorphy, and "Grown-up" and mesomorphy. Only two reversals of predictions were found, and these were statistically insignificant. There was a tendency for correlation coefficients between physique components and traits more or less common to both groups to be similar in magnitude as well as sign.

The results in general show associations between physique and reputation which seem congruent with Sheldon's hypotheses insofar as the kinds of

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relationships are concerned, but nowhere of the magnitude of those he reports between temperament and physique.

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APPENDIX

REPUTATION TEST — GROUP I

- 1a. Which boys and girls are restless and can't sit still, or get up and walk around a lot?
- 2a. Which ones are quiet and sit very still?
3. Who are the ones everybody likes?

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4. Who are the ones nobody seems to care much about?
5. Which ones are always smiling and laughing and are full of fun?
6. Which ones don't smile much and seem sort of sad or serious?
- 7a. Which ones quarrel and get mad easily?
- 8a. Which ones don't quarrel much and hardly ever get mad?
- 10a. Who are the ones that are daring and take big chances?
- 9a. Which ones are cautious and hardly ever take chances?
40. Which ones prefer older friends or friends in higher grades?
41. Which ones prefer younger friends or friends in lower grades?
11. Which ones are bossy and try to run things?
12. Which ones give in to others and hardly ever boss?
- 14a. Who are the good sports—the ones that always play fair, and can take it when they lose?
- 13a. Which ones aren't very good sports, don't play fair, or "can't take it" when they lose?
- 15a. Who are the most bashful or shy ones?
- 16a. Who are just the opposite of bashful and shy?
17. Which ones are good at games?
18. Which ones aren't very good at games?
22. Who are the real boys—the "regular fellows" that enjoy doing all the things boys do?
21. What boys *don't* enjoy doing all the things regular boys do?
- 23a. What girls are tomboys—the girls that try to act like boys?
- 24a. Who are the girls that are very much girls—feminine, and don't try to act like boys at all?
26. Who are the boys and girls that everybody thinks are good-looking?
27. Who are the ones that very few people think are good-looking?
28. Which ones show off a lot and act silly?
29. Which ones hardly ever show off or act silly?
30. Who are good at starting games and getting things going—the ones that suggest things to do?
- 31a. Who are the ones that just sit around and wait for others to make suggestions?
- 32a. Which ones are the most neat and like to look "just so"?
- 33a. Which ones are not very neat—whose hair and clothes never look "just so"?
42. Which ones hate to be told what to do by grown-ups?
43. Which ones really seem to like having grown-ups tell them what to do?
36. Which ones are very friendly and nice to everybody?
37. Which ones don't care much about making friends or being friendly?
- 7b. Who are the ones that are always arguing?
- 8b. Who are the ones that hardly ever argue?
44. Which boys pay a lot of attention to girls and hang around or tease them?

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- 45. Which boys don't pay any attention to girls and never hang around even to tease them?
- 46. Which girls are awfully interested in boys and pay a lot of attention to them?
- 47. Which girls have no interest in boys and pay no attention to them?
- 38a. Which boys and girls can take teasing and laugh at a joke on themselves?
- 39a. Which ones can't take teasing, and never laugh at a joke on themselves—just get mad or get their feelings hurt?
- 25. Who is your very best friend (or friends)?

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STATURE, BODY-BUILD, AND TOOTH EMERGENCE IN ALEUTIAN ALEUT CHILDREN

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The recent war affected the growth and development of millions of children. Many of them endured food deprivation in Europe or Asia, some of them were subject to bombing and disease, and some actually benefited from improved standards of nutrition. Few children, however, shared the experiences of those on the Aleutian islands of Attu, Atka, and Umnak. There the quiet maritime life and high-protein, low carbohydrate diet of the islanders was violently interrupted. The children from Attu were taken to Japan as prisoners-of-war and placed on a high carbohydrate diet. After the war they were repatriated by way of San Francisco and settled on Atka. The children from Atka and Umnak were hastily evacuated by the Navy, placed in emergency camps in southeast Alaska, and eventually returned to their partially destroyed homes and their native dietary.

As in so many other cases, in this case also we lack pre-war information on stature, body-build, and tooth eruption in Aleut children, but we do possess post-war information as a result of the Peabody-Harvard Aleutian expedition of 1948. Complete data on Aleut children prior to their capture or evacuation are lacking so that we cannot fully assess the effects of evacuation, relocation, and the major change in dietary. In presenting what data we have, we can only give an indication of the post-war status of these children, and in conjunction with data on adults and by comparison of younger and older children, we are able to suggest some trends.

MATERIAL

The Aleut included in this study represent the post-war remnants of three island populaces: those of Attu, Atka, and Umnak. They were studied in the two remaining villages, Atka and Nikolski, and in St. Paul Island in the Pribilof group. The total number of Aleut studied was 133, and it is estimated that this includes over 90 per cent of the surviving children from these populaces and over 80 per cent of the surviving adults (the remainder were in schools and sanatoria on the mainland or in the armed services). The group is small but representative.

Of the total number examined, 65 were 18 years of age or less: 39 of these were boys and 26 were girls (the majority of the children "away" at school were girls). In tabulating the data, two with spinal deformities were not included in the sections on stature and physique, and infants were also

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excluded. In the investigation of tooth emergence only those children erupting permanent teeth at the time of examination were included. The exact number in each part of the study is stated separately.

METHODS

Children able to stand erect were measured without shoes, but with stockings, using a wall anthropometer calibrated in the metric system. Weight was taken with clothing using a portable scale reading in pounds, and was later corrected for the weight of the rather heavy clothing usually worn. Birth dates were recorded (since good records were available in most cases) and age was computed to the nearest tenth of a year. Permanent teeth that had either just pierced the gum or did not reveal more than one-third of the crown were recorded as "emerging," thus concentrating attention on a very definite aspect of the phenomenon of tooth eruption.

Because of the small numbers involved, there was no point in computing age-norms. Therefore the body size of the Aleut children was compared to norms for other groups by the trend-line method. The actual measurements were plotted, and the trend lines for various groups superimposed on the scatter pattern. In this way it was possible to determine whether the majority of the Aleut children were above or below the norms for various groups, and to what degree.

The relative size of the children at various ages was also expressed as a percentage of the adult mean. In this way it was possible to contrast the relative size of the younger and older Aleut children, and also contrast the growth pattern of the Aleut with that of some other group.

Physique was expressed in terms of the "channels" of the Wetzel grid (11), since these channels are relatively independent of age. In this way it was possible to contrast the physique channel distribution of the Aleut children with that of Boston white children examined at Forsyth, and also to compare these Aleutian Aleut children with the St. Paul Aleut children recently reported by Wilde (12).

STATURE

Adult Aleut are medium to short in stature with a male mean of 160.6 cm. and a female mean of 151.7 cm. (6). Therefore the data on the Aleut children (shown on Table I) were compared with norms for Okinawan, Chinese, Mexican, and Japanese children, since adults of these groups approximate the adult Aleut in body size. The combined norms published by Meredith (7) and the tabulations provided by Krogman (5) greatly simplified this work.

In general, the Aleut children exceeded the stature norms for Okinawan, Mexican, Chinese, Japanese, U.S. Chinese, and U.S. Japanese (5,7) and fell

TABLE I
HEIGHT AND WEIGHT DATA ON ALEUTIAN ALEUT CHILDREN

No.	Yrs.	Ht. (cm.)	% Adult Stature	% Expected Stature	Wt. (kg.)	Ht./Wt. Ratio	Weight
BOYS							
30	2.9	96.7	56.3	53	31	11.4	-
34	3.9	96.9	56.3	55	33	11.9	-
014	3.1	96.9	56.3	55	35	11.7	-
47	4.4	104.3	64.9	61	33	12.9	M
022	4.9	103.3	64.3	63	35	12.4	A1
33	5.7	105.4	65.6	65	39	12.2	A2
007	7.3	122.0	78.9	71	45	13.4	B2
32	7.3	115.4	74.3	71	51	12.7	A1
025	7.9	120.9	75.3	73	53	12.7	A1
46	8.4	121.5	75.7	74	59	12.4	A2
009	8.5	131.7	82.0	75	57	13.5	B2
002	8.9	127.0	79.1	76	55	13.1	B1
28	9.5	124.6	77.5	78	61	12.5	A2
011	11.1	134.1	83.8	83	70	12.9	A1
34	11.4	143.0	89.0	84	75	13.4	B1
013	11.4	138.0	85.9	84	69	13.2	B1
15	11.6	139.4	86.8	84	74	13.1	M
17	11.6	139.0	86.9	84	74	12.2	A2
023	12.0	146.0	90.9	86	76	13.4	B2
50	12.6	152.2	94.8	87	99	13.9	M
034	13.2	144.1	90.9	89	79	13.4	B1
010	13.4	148.4	92.4	89	93	13.1	M
031	14.5	165.7	99.7	94	93	13.2	M
37	15.1	171.8	106.9	96	127	13.3	B1
78	15.6	158.5	96.7	97	102	13.4	B1
GIRLS							
75	14.1	157.7	98.2	98	131	12.2	A4
019	14.7	154.9	97.1	99	107	12.9	A1
007	17.2	163.4	101.7	99	118	13.1	M
76	17.4	164.0	102.7	99	130	12.5	A2
39	17.6	164.9	103.2	100	137	12.4	A4
56	1.7	78.4	49.7	49.5	17	10.7	-
94	1.8	79.5	52.5	47.5	25	10.7	-
35	1.9	86.3	52.9	50.1	21	11.4	-
006	2.9	96.0	56.7	53.0	26	11.4	-
44	4.9	107.4	70.7	66.0	41	12.3	A2
033	6.2	112.2	74.6	71.0	45	12.3	A1
039	6.9	106.1	68.9	73.0	42	12.0	A3
43	7.5	114.5	74.8	74.0	47	12.7	A1
83	8.3	125.9	82.9	78.0	57	12.9	M
49	8.7	119.4	78.7	78.0	43	13.2	B1
52	9.7	128.5	84.7	82.9	59	13.0	M
010	11.7	140.9	97.8	92.0	85	13.3	B1
007	11.5	134.5	101.8	97.9	100	12.7	A1
46	13.6	142.5	93.9	97.0	97	12.2	A3
21	14.3	146.0	94.9	96.9	97	12.3	A2
27	14.5	150.0	94.9	99.0	95	12.9	M
16	15.3	150.5	99.2	100.0	90	13.0	B1
004	17.0	161.8	104.6	100.0	113	12.5	A3
000	18.9	165.0	96.2	100.0	95	12.6	A2

below the norms for Mexican children in Los Angeles, American Negroes, and American whites in general (7, p. 185).

Since the Aleut are morphologically and serologically related to the Alaskan Eskimo, the Aleut data were compared with the only data on Eskimo children available, those of Kuskokwin district Eskimo compiled by school teachers and published by Hrdlicka (3). Using the raw data given, means for the Eskimo children were calculated and the trend line drawn. The trend lines for both Aleut and Eskimo are given in Figure 1. As shown, the Aleut children exceeded the Eskimo children in stature at all ages considered.

Since the numbers involved were small, the *chi-square* test was used to test significance. Twenty-six Aleut children were above the Eskimo trend line and only 7 below. Against the chance distribution (16.5 : 16.5) a *chi-square* value of 11.8 was obtained. This difference is judged to be highly significant and not due to chance.

The fact that the Aleut children were taller than children of other groups of comparable adult stature suggests that this generation of Aleut will exceed the present adult norms, an observation also suggested by the stature distribution of the older children (Figure 1).

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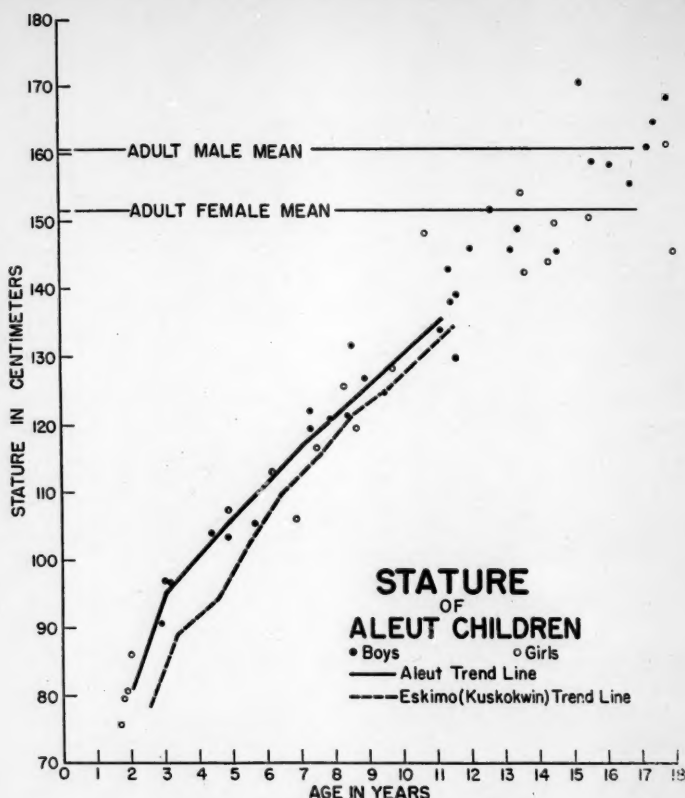


FIGURE I

Expressing the stature of Aleut children as a percentage of adult stature, and comparing the observed percentages with those calculated for American whites (9), the Aleut children appear to exceed expectancy as shown in Table I. In 38 out of the 49 children the actual percentage of adult stature exceeded expectancy; in 11 cases it was below expectancy. Again the *chi-square* test shows that this finding cannot be due to chance alone. The Aleut children are taller than would be expected on the basis of adult stature.

However, it may be observed that the younger Aleut children (those under ten years of age) are the ones who contributed most to this trend. Of 24 children under 10 years of age, only 3 fell below the expected percentage of adult stature. On the other hand, out of 25 children in the older

age group (10-18 years of age) 8 fell below expectancy. This difference is significant. Hence the younger Aleut children were relatively taller, and the older children, while still taller than would be expected, conformed more nearly to expectancy. This is of interest in connection with the data on tooth emergence.

PHYSIQUE

In considering the physique of the Aleut children, it should first be mentioned that the adults are compact, muscular, and short-legged, as is typical of Arctic peoples. Sheldon, who examined somatotype photographs of adult Aleut males, reported that they were "mesomorphic, with considerable centrotonia" (8). Anthropometric measurements and body build indices also suggest a more lateral build in the Aleut children, though of course such methods do not distinguish between laterality due to muscle and laterality due to fat.

The Wetzel channels (given in Table I) which are based on the log height/log weight relationship, offer a convenient way of comparing the physique distribution of the Aleut children with that of whites. In the present study, data is given on the channel distribution of 42 Aleut children and 100 Boston white children of matching ages.¹

As shown in Table II, 21 (50 per cent) of the 42 Aleut children were in the "A" channels, 9 (21 per cent) were in the "M" channel, and 12 (29 per cent) were in the "B" channels. In contrast, 34 per cent of the 100 Boston

TABLE II
WETZEL "CHANNEL" DISTRIBUTION OF ALEUTIAN ALEUT AND
BOSTON (WHITE) CHILDREN

Total No.		A ₄	A ₃	A ₂	A ₁	M	B ₁	B ₂	B ₃	B ₄
42	Aleut									
	Number	2	5	6	8	9	9	3	0	0
	Per cent	4.8	11.9	14.3	19.0	21.4	21.4	7.1	0.0	0.0
100	Boston Whites									
	No. or Per cent ..	6	5	9	14	22	22	18	1	3

white children were in the "A" channels, 22 per cent in the "M" channel, and 44 per cent were in the "B" channels. These two distributions differ significantly, and it is clear that the Aleut children, with an excess in the "A" channels, possess more lateral, stockier physiques.

¹ The Boston children, patients at the Forsyth Dental Infirmary for Children, were clinically healthy at the time of examination. Stature was recorded in centimeters, and weight (nude) was recorded in pounds. Hence, methodically, the two series were similar.

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In addition to comparing the Aleut children with Boston whites in respect to physique, it was also possible to compare them with their relatives on St. Paul Island in the Pribilof group using data published by Wilde (12). The St. Paul Aleut are closely related to the Aleutian Aleut: they originally came from the Aleutian islands, and the two groups frequently intermarry. The major differences between the two groups are in nutritional status and medical care. The St. Paul Aleut have competent medical attention and a

TABLE III
WETZEL "CHANNEL" DISTRIBUTION OF ST. PAUL ALEUT CHILDREN
AND ALEUTIAN ALEUT CHILDREN

Total No.		W E T Z E L C H A N N E L		
		A ₁ to A ₄	M	B ₁ to B ₄
89	St. Paul Aleut	50 (56.2 %)	21 (23.6 %)	18 (20.2 %)
42	Aleutian Aleut	21 (50.0 %)	9 (21.4 %)	12 (28.5 %)

constant food supply. The Aleutian Aleut have only sporadic medical care, they have a much higher morbidity rate, and there are yearly periods when food is scarce.

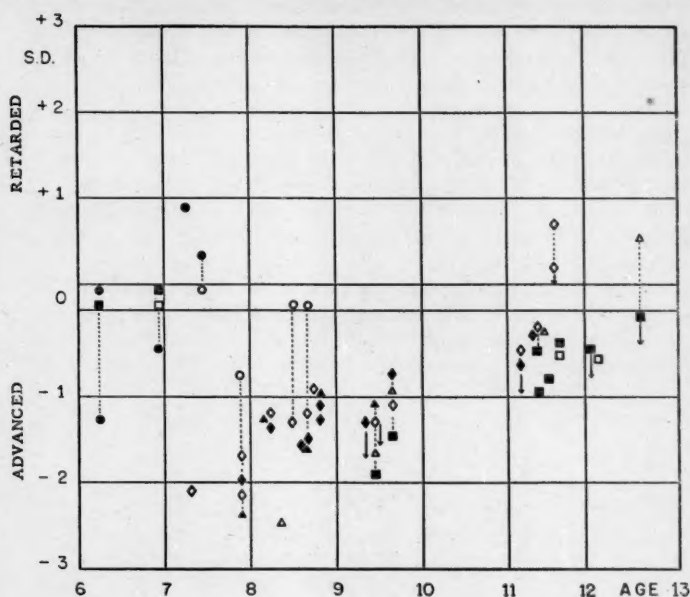
However, when the Wetzel grid distributions were compared, no significant difference was found between the two groups (as shown in Table III). In both groups approximately 50 per cent were in the "A" channels with nearly equal proportions in the "M" and "B" channels. Apparently the characteristic Aleutian physique distribution, which differs markedly from that in whites, is preserved despite differences in nutritional status and medical attention.

TOOTH EMERGENCE

Studies on tooth emergence were restricted to the permanent teeth (excluding the highly unreliable third molars). Hence, the group was limited to those Aleut children (21 in all) in whom one or more permanent teeth had just pierced the gum or in whom more than one-third of the crown of some particular tooth was visible. In each case the age at the time of the examination was compared with the mean age of emergence given by Hurme (4) and the difference was expressed in standard scores.² Thus it was possible to determine whether tooth emergence in these 21 children was advanced or retarded in comparison with whites.

² The Standard Score used here is the difference between the observed age and the mean age divided by the standard deviation. Teeth emerging in advance of the norms are here described as "advanced" and those emerging after the norm age are described as "retarded."

TOOTH EMERGENCE



LEGEND: SYMBOLS INDICATE CLASS OF TEETH AND LOCATION.

● INCISORS ▲ CANINES ◆ PREMOLARS ■ MOLARS

OPEN SYMBOLS (□) REPRESENT MAXILLARY TEETH,

CLOSED SYMBOLS (■) REPRESENT MANDIBULAR TEETH.

FIGURE 2

As shown in Figure 2, tooth emergence appears to be markedly and significantly earlier in these Aleut children. On an individual basis, tooth emergence was in advance of the norms in 16 children and retarded in only 5. This proportion of 16:5 differs significantly from the chance proportion of 10.5:10.5. On the basis of emerging teeth, the comparatively advanced emergence in Aleut children is even more striking. Of 54 teeth emerging at the time of investigation 24 were advanced at least one standard score, 25 were advanced less than one standard score, and only 5 were

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retarded. The mean deviation for all 54 emerging permanent teeth was 0.79 ± 0.096 standard scores, indicating the degree of advancement.

Since the data on stature showed that the younger Aleut children were comparatively more advanced, it was of interest to compare the tooth emergence data on younger and older children. (Because of the small sample, this was done on the basis of individual teeth.) Here again the younger children appeared to be the more advanced, and the older children fell nearer expectancy. In the younger group (under 10 years of age) there were 13 children with 38 emerging permanent teeth. The mean deviation in standard scores was 1.00 ± 0.12 . On the other hand, in the older group (over 10 years of age) there were 8 children with 16 emerging permanent teeth. The mean deviation from the white norms was 0.27 ± 0.12 standard scores.

Tooth emergence is not only earlier in the Aleut children than in Whites, but the advance is most pronounced in younger children, while in the older children it is barely significant. Unfortunately it is not possible to determine whether this difference between the two age groups reflects more advanced over-all development of the younger children, or whether it is actually an illusion produced by comparing data on different morphologic classes of teeth.

DISCUSSION

Certain facts emerge from the data, despite the small size of the sample. The adult Aleut are among the shorter peoples, while their children rank higher in stature among the peoples of the world than do their parents. They differ from American whites in physique, including in their number more stocky children and fewer linear ones. This is true both for the Aleutian Aleut and the St. Paul Aleut, despite differences in economic status and medical care. Tooth emergence is earlier in Aleut children than in whites generally, and there is evidence that the younger children are relatively more advanced than the older ones in both body size and tooth emergence.

It is no longer a novelty to discover that children are becoming larger, or to find that children of the present generation surpass their parents in stature. Such trends are generally attributed to more abundant food, better standards of medical care, or more hygienic living. But these Aleut children underwent deprivation and dislocation. Some were imprisoned in Japan, others were refugees in Alaska, and even upon their return to the Aleutian islands conditions remained unsettled. Yet the children are not smaller than might be expected, and the youngest children, those who spent their formative years under adverse conditions, appear to be relatively more advanced in several respects. This may have an environmental basis, or it may reflect a different growth pattern.

Capture and imprisonment, hasty evacuation and relocation, or a shift from a native high-protein fish and seal diet to a high-carbohydrate diet

would not ordinarily be considered as growth promoting. However, the native diet appears to be rather low in total calories³ and the wartime diet may have provided more calories, though in the form of refined carbohydrates, thus stimulating an increase in body size.

When we consider the subject of physique, we find that the Aleut children, like the adults, are of stocky build. Their physique distribution differs from that of American whites, and the Wetzel channels thus have different referents in the Aleut. What is even more important is the striking similarity in physique between the Aleutian Aleut children and the St. Paul Aleut children. On St. Paul Island there is a well-equipped hospital, constant health supervision, and easy access to vitamin supplements, and the mortality and morbidity rates there are low. In contrast, health facilities on Atka and Umnak Islands are primitive, and food is less plentiful. Yet the physique distributions of the two groups are not significantly different; as Wetzel has pointed out, the channel positions *alone* are not measures of general health.

The earlier tooth emergence noted in these Aleut children may be due to environmental factors, or it may have a racial basis; too little is known about those factors influencing the emergence of the teeth for one to be dogmatic. However, it is worth noting that, whenever series of whites, Negroids, and Mongoloids are compared, emergence is latest in the whites. Steggerda and Hill (9) examined white, Negro, Maya, and Navajo children: they found that tooth emergence was earliest in the Navajo and latest in the whites. Hellman (2) also concluded that tooth emergence, although influenced by various factors, is later in European whites than in other groups. Hence the "early" tooth emergence in the Aleut children may simply be due to the fact that the norms used are based on the late-emerging whites.⁴

SUMMARY

1. This paper is concerned with the stature, body build, and tooth emergence in Aleutian Aleut children.
2. In stature, these children fall slightly below the norms for American whites, above the norms for Chinese, Japanese, and Mexicans, and above the norms for American-born children of Chinese and Japanese descent.
3. The stature of the children, expressed as percentage of adult stature, exceeds expectancy, especially in the younger children.
4. The Aleut children differ from whites in body build, but the Wetzel

³ Dietary analyses made by Tomi K. Hibbett, M.A., are based on questionnaires collected by C. F. A. Moorrees.

⁴ It may be observed that the arcus senilis appears much earlier in the Aleut than in whites (1), and it is possible that the Aleut at all chronological ages may be physiologically advanced in comparison to whites.

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channel distribution is almost identical to that for the related, but economically superior, St. Paul Aleut children.

5. Tooth emergence is markedly advanced as compared to whites. This advance equals 1.00 ± 0.12 standard scores in the younger children and only 0.27 ± 0.12 standard scores in the older.

6. The measures used do not reveal growth retardation or stunting as a result of the wartime experiences of this group. This is especially true for the younger children who are most advanced in tooth emergence and who exceed their expected stature most markedly.

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SOCIO-ECONOMIC STATUS AND RACE AS FACTORS IN INFANT INTELLIGENCE TEST SCORES

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This report is concerned with the mental test performance of young infants and its possible relationship on the one hand to socio-economic status and to racial identification on the other. Since the matter of "intelligence" in the months following birth is highly controversial, its measurement in this study will be discussed in some detail.

The Northwestern Infant Intelligence Test consists of several forms, depending on the age range for which each is designed. Form A, which is of primary concern in this report, is a point scale of forty items for use with infants from four to twelve weeks of age. Form B is for use with infants from thirteen to thirty-six weeks; a third form (to be designated as Form C) is now being developed for babies of thirty-seven weeks to two years.

Reliability of measurement at these early age levels has been a question of primary significance. For several reasons a baby may make a low score: some of the more apparent of these are physical handicap, or illness on the occasion of the test, poor rapport between examiner and child, late maturation in a child whose later development will compensate for this. Finally, real deficiency or retardation in mental ability may be the basic factor.

Despite this multiplicity of factors which contribute to errors in measurement, it has been found that Form A of the NIIT has certain reliability. Using the split-half method of correlation, coefficients for each week from four to twelve range from .79 to .94; for the total period the over-all coefficient of correlation for reliability is .84. This index of reliability is based on 276 children tested at The Cradle in Evanston. (This index, for Form B, based on examination of 200 infants, is .80.) Although the test-retest reliability of Forms A and B are relatively high when the tests are given close together, they are often much different when separated by a few weeks. The median¹ difference between original and retest scores for NIIT and between either form and the Cattell scale was 10 for 136 retests with similar differences for all tests used. These large differences indicate that little significance can be attached to any single test score for the diagnosis

¹ The median rather than the mean was used because of a few large atypical differences which were probably due to the lack of cooperation by the infant on one of the tests.

for infants and that only by repeated tests can a valid score for any individual be obtained.

So far as validity is concerned, the author compared scores of 97 feeble minded children with scores for "normal" children, finding the former to be significantly less competent with Form A (1). Other evidence that is being collected by repeated testing over a two year period indicates considerable validity for the tests.

The remainder of this report will be concerned with several studies, using Forms A and B of the NIIT, of groups structured according to socio-economic or apparent racial identification.

SOCIO-ECONOMIC STATUS

1. Babies six to twelve weeks of age and of similar socio-economic background were compared on the basis of their being reared at home or in an institution. It was found that the home babies were superior in I.Q. by five points (statistically significant at the .01 level of confidence).

2. Three studies compared infants rated high vs. low on mid-parent socio-economic status. One of these (using 50 lower and 65 higher) yielded mean I.Q.'s on Form A of 100 and 98 respectively. A second study (utilizing 287 lows and 246 highs) gave 101 and 100.5. A study by Pfaff (3), which controlled carefully such factors as the examiner, education of the parents, etc., confirmed the findings of these studies, namely, that socio-economic grouping yields no significant difference.

DIFFERENCES BETWEEN WHITE AND NEGRO INFANTS

A preliminary study of 37 Negro infants showed that they had a mean I.Q. on the NIIT (Form A) of 110.0, which was 8.5 points higher than the mean for white babies tested previously. (With a critical ratio for the difference at 2.6, statistical significance was indicated.) This preliminary finding was checked by examining 113 Negro infants, and comparing them with 543 white infants. With means at 102 and 100 respectively, the difference is seen to be minimal, and was found actually to be insignificant statistically. The Negro infants in this study were regularly examined at one of two Infant Welfare Clinics in Evanston and on the Chicago North side. They were normal, healthy babies.

A third study (2) compared groups of 110 Negro and white babies under conditions of greater control. All examinations were done by the same examiner. Subjects were matched upon such variables as sex and age, and all subjects were of normal birth. Thirty-seven pairs, from four to twelve weeks of age, were given Form A of the NIIT, while 73 children from 13 to 36 months were given Form B. The mean I.Q. for the Negro infants

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(105.6) is greater than that for the whites (103.0), but the difference lacks statistical significance.

All three studies show the mean I.Q. for Negroes to be as high or slightly higher than that of white children of the same age. If there be any real difference, it may well be due to one or both of two possibilities: 1) There is an unsupported theory that Negro infants are relatively more mature than white children at these early ages. 2) An even more plausible theory is that, in the typical Negro home with more people living in smaller quarters, the child receives more social contacts. These contacts, like the effects of home vs. institutional care, result in more social-intellectual development and higher test scores. Seemingly this increase in score is not limited to any part of the intelligence test scale and holds for both the Northwestern and Cattell Infant scales.

In conclusion, it has been found that below 36 weeks of age socio-economic status of parents has no demonstrable influence on the intelligence test scores of the infants of this study. There are individual differences between test scores; these may be largely hereditary but even at these early ages social influences may be effective as shown by differences between home and institutional babies.

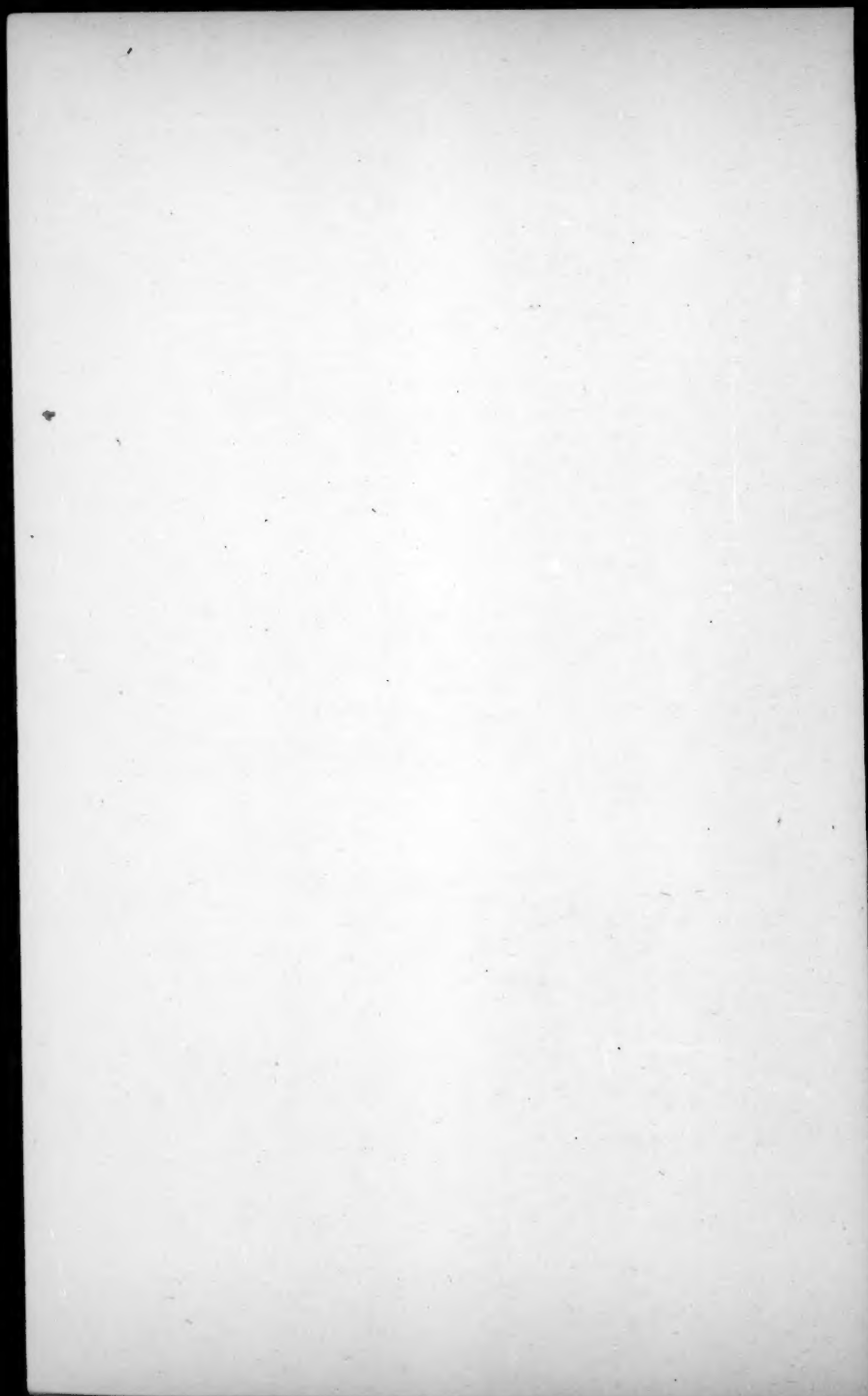
These results are limited to typical midwestern white cultures. How applicable they are to other cultures such as the so-called mountain whites is worthy of further study. Likewise, Negroes and whites as found in the Chicago area show no large differences. Would such results hold for other racial groups? This problem is in process of receiving further study.

If the differences found between infant test scores are not limited by socio-economic or racial factors, then the possibility of educational influences is greater than is generally suspected.

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BODY FORM IN CHILDHOOD:
RATIOS QUANTITATIVELY DESCRIBING THREE
SLENDER-TO-STOCKY CONTINUA ON GIRLS
FOUR TO EIGHT YEARS OF AGE

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This paper presents a companion investigation to one previously reported by Meredith and Culp (3). The problems attacked, the ages considered, and the procedures employed are essentially the same in both papers. The distinction lies in the sex of the subjects; while the earlier study pertained to boys, the present study covers similar ground on girls.

PROBLEM

Attention is centered on three anthropometric ratios: each describes a body form continuum of the slender-to-stocky variety. One of the ratios affords a measure of gradations from slenderness to stockiness for the upper extremities, the others give analogous indices for the body stem and lower extremities respectively. Specific objectives of the investigation are:

1. To determine the mean trend for each ratio over the period from four to eight years of age. The trend representing the upper limbs, for instance, will show whether in girls these appendages become stockier, maintain their form, or become more slender with age. The three trends taken together will also indicate whether or not the average patterns of change are similar for the upper limbs, lower limbs, and body stem.
2. To compare the mean trends for girls obtained in this investigation with the mean trends for boys obtained by Meredith and Culp. These comparisons will indicate the extent to which the average boy and average girl are alike (or dissimilar) in each index of form at age four years, and the extent to which sex relationships change (or remain constant) during the age period from four years to eight years.
3. To study, at successive annual ages from four to eight years, the variability of girls in each ratio. The procedure here is chosen to accomplish the dual purpose of describing individual differences and developing tentative norms. Five normative variability categories (Stocky, Moderately Stocky, Average, Moderately Slender, and Slender) are defined and numerically delimited.
4. To discover, utilizing correlation methods, the degree to which there is concomitant variation in the ratios. That is, to secure information on questions such as: Do girls who have stocky body stems sometimes have slender lower extremities, and vice versa? Is the association between the

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upper limb ratio and the lower limb ratio sufficiently high that either one is adequate to characterize the slenderness or stockiness of an individual in regard to both pairs of appendages?

SUBJECTS

The subjects were 170 girls residing in or near Iowa City, Iowa, and attending the University of Iowa experimental preschool laboratory or elementary school.¹ All were American-born white girls of northwest European ancestry. From the standpoint of socio-economic status, they were drawn from the professional and managerial groups. Information on occupation of the fathers showed approximately 75 per cent to be professional men (mainly members of the University faculty) and the remainder business proprietors, sales representatives, or business managers.

Most of the girls served as subjects at more than one age, many annually over the period from age four years to age eight years. Data collection took place during the years from 1937 to 1950. Always the anthropometric examinations were made within three days of a subject's birthday. Consequently, the 120 girls representing age four years were all measured on or very near their fourth birthdays, the 159 girls representing age five years on or very near their fifth birthdays, and so forth. The total number of subjects at each of the five ages was as follows:

	<i>Age in years</i>				
	4	5	6	7	8
Number of girls	120	159	138	114	101

Data for the body stem and lower limb ratios were obtained at all examinations and data for the upper limb ratio at slightly more than half of the examinations (see Table I).

RATIOS AND BASIC MEASUREMENTS

The three body form indices (i.e., ratios times 100) are:

$$\text{Upper limb index} = \frac{\text{Arm girth}}{\text{Upper limb length}} \times 100$$

$$\text{Lower limb index} = \frac{\text{Leg girth}}{\text{Lower limb length}} \times 100$$

$$\text{Stem index} = \frac{\text{Chest girth}}{\text{Stem length}} \times 100$$

¹ They were measured either by the first author or by anthropometrists trained under his direction during the years he was a member of the staff of the Iowa Child Welfare Research Station.

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Following common practice, the ratios were multiplied by 100 in order to express each quotient as a percentage.

Included in the previously cited report by Meredith and Culp (3, pp. 6-8) is a detailed statement describing the anthropometric technique employed in obtaining the measurements basic to computation of the indices. Since this is readily accessible to the reader, it is considered unnecessary in the present paper to give more than a general identification of each measurement.

Arm girth.—Maximum circumference of the left arm in the region approximately half-way between the acromion and the olecranon.

Upper limb length.—Distance, on the left side, from the lateral border of the acromion to the distal end of the middle finger.

Leg girth.—Maximum circumference of the left leg in the region of the calf.

Lower limb length.—Stature (vertex-soles distance) minus stem length (vertex-ischia distance). That is, distance from the most inferior plane of the ischia to the plantar surface of the feet.

Chest girth.—Circumference of the thorax at the level of the xiphisternal junction during normal respiration.

Stem length.—Distance from the vertex to the upper surface of a bench on which the subject assumed an erect sitting position.

An exceptionally rigorous procedure was followed in collecting these basic data. At every examination, measurements were made by two anthropometrists. In instances where their results failed to show close agreement (i.e., agreement within 0.1 cm. for leg girth, 0.2 cm. for stature and arm girth, and 0.4 cm. for the other dimensions), additional measurements were made. This degree of research rigor was initiated in 1937 and maintained throughout the thirteen years of data collection in order that the obtained measurements would not differ appreciably from true morphologic values and, therefore, would constitute highly valid raw data for the computation of indices.

CENTRAL TENDENCY FINDINGS

The basic data from each examination first were grouped with reference to the year of age they represented. This separated the data into five age classes. Next, for the subjects in each age class, three series of index values were derived. In essence, the appropriate pairs of measures on a subject were used to calculate by turn the upper limb index, the lower limb index, and the stem index.

Table I presents the mean from each resultant series of values specific for age and index. It will be seen that:

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TABLE I

MEANS* FOR THREE BODY FORM RATIOS ON IOWA GIRLS OF NORTHWEST
EUROPEAN ANCESTRY AND ABOVE AVERAGE
SOCIO-ECONOMIC STATUS

Age (yrs.)	Upper Limb Index		Lower Limb Index		Stem Index	
	N	Mean	N	Mean	N	Mean
4	64	39.8	120	49.8	120	88.1
5	86	37.7	159	47.6	159	86.3
6	77	36.8	138	46.1	138	84.9
7	61	35.7	114	44.7	114	84.2
8	55	35.2	101	44.1	101	84.5

* Both means and medians were computed. Identical results were obtained at ages four and six years for the lower limb and at ages four and seven years for the stem. In all other instances the medians were slightly lower than the means (no difference exceeded 0.4 and the average difference was 0.2).

1. The means for the upper limb index and for the lower limb index gradually decrease with age. That is, over the period from four to eight years of age the extremities of the average girl become continuously more slender. Arm girth is 39.8 per cent of upper limb length at age four years and 35.2 per cent of upper limb length at age eight years. The corresponding mean values for leg girth in percentage of lower limb length are 49.8 at age four and 44.1 at age eight.

2. For both the upper and lower extremities, the decline in the index means is more marked between four and six years than between six and eight years. The mean for the upper limb index is 3.0 lower at age six years than at age four years, and 1.6 lower at age eight years than at age six years. Parallel differences for the lower limb are 3.7 and 2.0 respectively.

3. The means for the stem index decrease over the age period from four years to seven years. This decrease in stockiness of the body stem proceeds at a faster rate between four and five years than between six and seven years (the mean at five is 1.8 less than at four, while the mean at seven is only 0.7 less than that at six). The mean obtained at age eight is slightly higher than that at age seven. This finding will be considered further in the discussion of the two sexes which follows.

Figure 1 graphically compares the means for girls from this study with the means for boys from Meredith and Culp (3). It will be seen that there are three separate panels, one pertaining to each index. Black dots depict the obtained means, while dash and solid lines portray the generalized trends of change for boys and girls respectively.

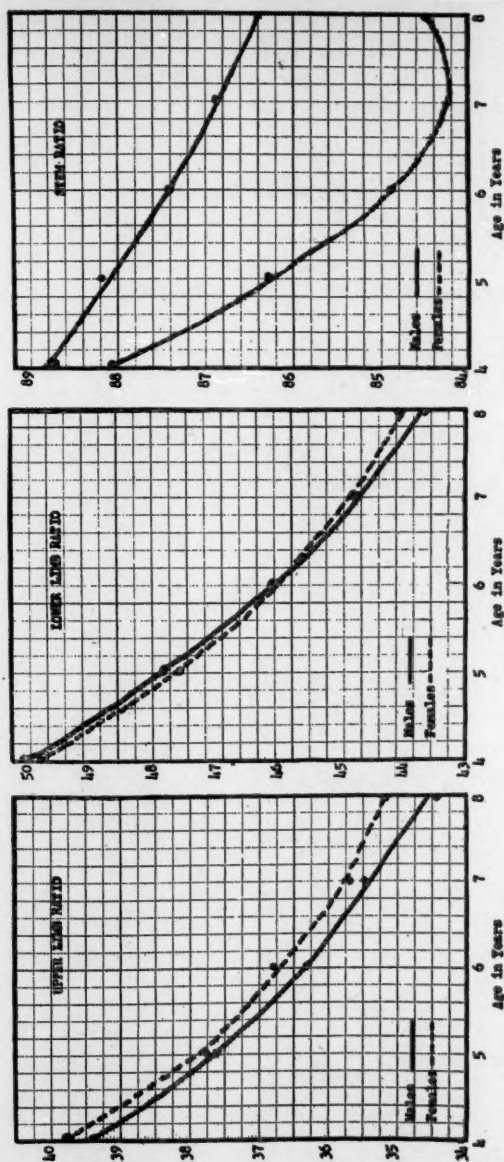


FIGURE 1.—Trend lines drawn to means for three indices of body form on Iowa boys and girls of northwest European ancestry and above average socio-economic status.

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Reference to Figure 1 shows:

1. The four trend lines for the upper and lower limbs on each sex all take the form of falling curves convex to the base. They support the generalization that during the period from four to eight years of age the extremities of the average boy and girl become less stocky (i.e., more slender) at a gradually diminishing rate.
2. The upper extremity of the average girl is slightly more stocky than that of the average boy over the entire age period under study. For the lower extremity, the average boy is slightly the stockier at ages four and five years, both sexes are about equally stocky at six and seven years, and the average girl becomes the more stocky by eight years.
3. There is less similarity of the sexes in the curves for the stem index than in the curves on the extremities. The stem index trend for boys is a slowly falling curve mildly convex to the base. That for girls falls at a much faster rate between the ages of four and seven years, and then rises slightly between seven and eight years.

The finding of a rise in the stem index of girls after seven years apparently registers an earlier form change in the female than in the male. This is supported by recent results obtained on Oregon boys seven and ten years of age (2). The means for the stem index from this study indicate that the trend for boys changes direction shortly after eight years, and by age ten the body stem is about as stocky as it was at age five.

VARIABILITY FINDINGS

As indicated earlier, variability was studied with a twofold objective in mind. It was desired, at once, to (a) display the scatter of each index at the five ages sampled and (b) construct frames of reference that would readily be usable for normative description of the body-form status and/or progress of like-age girls. To elaborate upon (b), the end sought was a practical method by which profiles of body form could be obtained on individual girls at any of the ages under study.² Comparison of profiles for the same individual at different ages also would enable one to trace age to age changes and/or persistences in body form.

Four percentiles (the 10th, 30th, 70th, and 90th) were computed to represent the frequency distribution for each index at each year of age. These percentiles served to subdivide every distribution into five sections or categories. As in the study on boys by Meredith and Culp (3), the categories were designated—Stocky, Moderately Stocky, Average, Moderately Slender,

²The three indices of this study are not regarded as supplying more than part of what could be considered a reasonably comprehensive profile of body form. To these should be added indices depicting "head width in relation to head length, face width in relation to face height, shoulder width in relation to hip width, chest girth in relation to abdomen girth, stem length in relation to length of limbs, and possibly others" (3, p. 9).

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and Slender. This means, of course, that the slender category was defined to encompass the lowest 10 per cent of each distribution of index frequencies, the moderately slender category to encompass the next 20 per cent, the average category to include the middle 40 per cent, the moderately stocky category to include the next 20 per cent, and the stocky category to comprise the highest 10 per cent.

TABLE II

VARIABILITY NORMS FOR THREE BODY FORM RATIOS ON IOWA GIRLS OF NORTHWEST EUROPEAN ANCESTRY AND ABOVE AVERAGE SOCIO-ECONOMIC STATUS

	<i>Slender</i>	<i>Moderately Slender</i>	<i>Average</i>	<i>Moderately Stocky</i>	<i>Stocky</i>
AGE FOUR YEARS					
Upper limb index	Below 37.0	37.0—38.1	38.2—40.8	40.9—43.1	Above 43.1
Stem index	Below 45.6	45.6—48.1	48.2—51.1	51.2—53.4	Above 53.4
Lower limb index	Below 83.7	83.7—86.4	86.5—90.0	90.1—92.5	Above 92.5
AGE FIVE YEARS					
Upper limb index	Below 34.5	34.5—35.8	35.9—39.5	39.6—41.7	Above 41.7
Stem index	Below 43.4	43.4—45.6	45.7—48.9	49.0—51.9	Above 51.9
Lower limb index	Below 81.7	81.7—84.0	84.1—88.0	88.1—91.6	Above 91.6
AGE SIX YEARS					
Upper limb index	Below 33.2	33.2—35.1	35.2—38.1	38.2—40.9	Above 40.9
Stem index	Below 42.1	42.1—44.6	44.7—47.5	47.6—50.0	Above 50.0
Lower limb index	Below 80.8	80.8—82.7	82.8—86.5	86.6—88.9	Above 88.9
AGE SEVEN YEARS					
Upper limb index	Below 32.6	32.6—34.1	34.2—37.1	37.2—39.2	Above 39.2
Stem index	Below 40.8	40.8—43.3	43.4—45.7	45.8—48.6	Above 48.6
Lower limb index	Below 80.2	80.2—82.1	82.2—85.6	85.7—89.0	Above 89.0
AGE EIGHT YEARS					
Upper limb index	Below 31.7	31.7—33.8	33.9—36.0	36.1—39.4	Above 39.4
Stem index	Below 40.2	40.2—42.5	42.6—45.3	45.4—48.5	Above 48.5
Lower limb index	Below 79.3	79.3—82.0	82.1—86.1	86.2—90.4	Above 90.4

Table II presents the numerical results. Specifically, the placement of the four percentiles is as follows: the 30th and 70th percentiles are the boundary values of the "Average" category; the 10th percentiles are the lower limits of the "Moderately Slender" category; and the 90th percentiles are the upper limits of the category captioned "Moderately Stocky." To facilitate use of

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the table in characterizing individuals, the figures for all three indices at a particular age are placed together.

CORRELATION FINDINGS

The Pearson product-moment method of correlation was used to determine the amount of concomitant variation for the indices of the two extremities and for the indices of each extremity with the body stem. Explicitly, at successive annual ages from four to eight years of age, study was made of the extent of relationship between (a) the lower limb index and the stem index, (b) the upper limb index and the stem index, and (c) the upper limb index and the lower limb index. The coefficients obtained, together with estimates of their statistical significance, are shown in Table III. It is found:

TABLE III
INTERCORRELATIONS FOR THREE BODY FORM RATIOS ON IOWA GIRLS OF
NORTHWEST EUROPEAN ANCESTRY AND ABOVE AVERAGE
SOCIO-ECONOMIC STATUS

Age (yrs.)	Lower Limb Index with Stem Index			Upper Limb Index with Stem Index			Upper Limb Index with Lower Limb Index		
	N	r	t*	N	r	t*	N	r	t*
4	120	.19	2.1	64	.47	4.2	64	.73	8.4
5	159	.25	3.2	86	.45	4.6	86	.74	10.1
6	138	.29	3.5	77	.49	4.8	77	.76	10.1
7	114	.27	3.0	61	.54	5.1	61	.65	6.6
8	101	.47	5.3	55	.56	5.0	55	.83	10.9

* For a discussion of the nature and appropriateness of this test of statistical significance see Lindquist (1, pp. 210-211).

1. All of the coefficients are positive in sign, and all except one are statistically significant at the 1 per cent level of confidence. The generalization which follows, in common with that arrived at by Meredith and Culp on boys, is that each slender-to-stocky continuum holds some degree of direct relation to the other two.

2. At every age, the correlations are lowest for the lower limb index with the stem index, intermediate for the upper limb index with the stem index, and highest for the upper limb index with the lower limb index. Again, this finding for girls corresponds with that secured by Meredith and Culp for like analyses on boys.

3. Over-all figures typical of each series of coefficients are .30, lower limb with stem; .50, upper limb with stem; and .70 plus, upper limb with lower

limb. Characteristic r 's of similar order were found by Meredith and Culp.

4. The present study and the Meredith and Culp study also are in agreement in obtaining consistently lower r 's at ages four to six years than at age eight years.

SUMMARY

The study reported above is essentially the female counterpart of an earlier study in which male subjects were used. Both studies make a metrical approach to the determination of body form in early childhood, employing indices which measure the slenderness or stockiness of the body stem, upper limbs, and lower limbs.

For the present study, the subjects were American-born white girls of northwest European ancestry and above average socio-economic status. They resided in or near Iowa City, Iowa, and were enrolled in the University of Iowa experimental preschool laboratory or elementary school.

Three indices, each derived from highly reliable basic data, are studied: Arm girth/Upper limb length $\times 100$, Leg girth/Lower limb length $\times 100$, and Chest girth/Stem length $\times 100$. Different problems call for application of central tendency, dispersion, and correlation statistics. All analyses pertain to the five consecutive annual ages from four years to eight years inclusive.

Central tendency values indicate that girls become more slender in body stem over the age period from four to seven years, and more slender in upper and lower extremities over the entire age period investigated. Correlation coefficients reveal a low association between the stem and lower limb indices (r 's = .19 to .47), an association slightly higher between the stem and upper limb indices (r 's = .45 to .56), and a moderate association between the indices for the upper and lower limbs (r 's = .65 to .83). Dispersion analyses are directed toward the construction of tables useful for depicting and following changes with age in the body form of individual girls relative to the peer group.

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CERTAIN CHARACTERISTICS OF THE SELF AS RELATED TO AFFECTION

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It has been emphasized that affection plays a vital part in the development of the personality of children (1). It is believed that, in the development of personality, the child comes to have certain feelings and attitudes about himself. Much of the self-concept is taken over from the reaction of people to him. He comes to see himself, in part, as he thinks others see him. If others give evidence of holding him to be of value, he tends to see himself as valued. To attain the kind of personality which will enable him to meet his developmental tasks and the future problems of his world, he should have security in the belief that he is valued. A feeling of value acquired through experiences of affection is a sustaining factor for both children and adults.

If it is important for people who work with children to show them affection and to provide experiences in which they can acquire a feeling of value in interpersonal exchanges, there must be some evaluation of the structure of these people's personality. The fundamental question with which we are to deal is: What are some of the structural characteristics of the self which prevent a person from showing affectionate behavior? It is believed that there are many causes for a lack of affectionate behavior and that these causes vary from individual to individual. On the other hand, there are some fundamental and common factors in people who cannot show affection. It is the purpose of this report to describe some findings in regard to this problem.

CHARACTERISTICS OF THE SELF WHICH PREVENT AFFECTIONATE INTERCHANGE

The following characteristics have been found in those who do not show affection, and these seem to be significant in preventing affectionate interchange: 1) devaluation of the self, 2) dependency, 3) anxiety, and 4) conflict.

In order to show affectionate behavior in interpersonal exchange, *dependency* on others for strength in meeting adjustment problems must be limited. Affection is related to feelings of dependency; that is, in affectionate exchange one is somewhat dependent upon another for affection. This means that a person in giving affection must be willing and able to have

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another depend on him. People with extreme feelings of dependency cannot tolerate dependency in others.

Anxiety is another factor which interferes with emotional exchange. In giving affection to another, there must be little anxiety; that is, in the affectionate exchange there must not be insecurity, rejection, or hostility. People having a high level of anxiety are afraid for others to see that they are desirous of giving themselves to another. Also, anxiety consumes energy which could be used in emotional exchange. Anxious people are often fatigued and therefore unable to expend energy in affectionate behavior.

Conflict is another source of interference with the ability of the person to show affectionate behavior. A person with a severe conflict must devote his energy and perceptive abilities to efforts at solution. Conflict lowers sensitivity to stimuli which are related to what is considered to be a solution. Conflict, then, interferes with affectionate behavior in two ways: loss of energy and loss of ability to perceive and utilize necessary stimuli.

TABLE I
NUMBERS AND PERCENTAGES OF SUBJECTS MARKED FOR
AFFECTION IN EACH DIVISION OF RATING SCALE
FROM PROJECTIVE TEST DATA

R A T I N G		D I V I S I O N S			
1		2		3	
Number	Per Cent	Number	Per Cent	Number	Per Cent
9	36	13	52	3	12

METHODOLOGY AND RESULTS

A projective test was administered to twenty-five teachers.¹ The projective data were analyzed for these characteristics of the self which have been found to prevent affectionate interchange: 1) nature of devaluation of the self, 2) amount of dependency, 3) amount of anxiety, and 4) amount of conflict. On the basis of this analysis, the subjects were rated in a three point scale for the degree to which they would show affection. A rating of *one* on the scale meant the subject offered little affection to children. A rating of *two* meant the offering of some affection, and a rating of *three* meant the offering of much affection.

¹ The projective test consisted of child and child-adult situations and was similar to Murray's *Thematic Apperception Test*. This study was originally begun in a research project under the Committee on Human Development at the University of Chicago. The project was under the direction of Caroline Tryon.

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Observations of each teacher were made by members of the research staff. These observations were analyzed for the amount of affection, warmth, and support shown by the teacher to children. Each teacher was then rated on the same scale for degree of affection as shown by the observational data.

TABLE II
NUMBERS AND PERCENTAGES OF SUBJECTS MARKED FOR
AFFECTION IN EACH DIVISION OF RATING SCALE
FROM OBSERVATIONAL DATA

R A T I N G D I V I S I O N S					
1		2		3	
<i>Number</i>	<i>Per Cent</i>	<i>Number</i>	<i>Per Cent</i>	<i>Number</i>	<i>Per Cent</i>
11	44	10	40	4	16

By a comparison of raw scores on the rating scales it was possible to verify the findings from the projective data with the observational data. The amount of agreement between the ratings from the projective data and the ratings from the observational data was above chance at the .01 level of significance.

TABLE III
SIGNIFICANCE OF DIFFERENCES BETWEEN T A T PREDICTIONS
AND CHANCE EXPECTANCY

	<i>Expected by Chance</i>	<i>Obtained</i>	<i>Chi-Square</i>	<i>Level of Significance</i>
Agreement	9.75	21.00	12.98	
Disagreement	15.25	4.00	8.29	
TOTAL			21.27	.01

THE CASE OF ELEANOR WILSON

A partial analysis of projective test data on the personality structure of a subject is included in this report. Some of the results of the analysis are given here and only enough of the methodology to illustrate the above findings. The stories which Eleanor Wilson (thirty years old and unmarried) told about the series of eight pictures used in this study are given in order to exemplify the characteristics described above. On the rating scales she

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was marked in the lowest division on evidence from both the projective and the observational data.

Description of Pictures and Protocol

Picture 1: A middle-aged man is seated holding a skull in his hands. Two small boys are standing close by looking at the skull.

Story 1: Father is explaining how a broken piece of pottery can be mended. The children probably found the piece of junk while they were out playing and brought it home asking father to repair it. The boy looks like a collector for he has things sticking out of his pocket. The children will be the investigating type with an understanding father who will try to answer all their questions to the best of his ability.

Picture 2: A little girl is sitting in a brick doorway stringing pop corn. A pan is in her lap.

Story 2: Mary is shelling peas. A job which she dislikes but her mother doesn't feel well and someone has to do it. Mary would rather be out playing but she knows how cross mother will be if she doesn't do her work. Rather than raise a fuss she will comply with the mother's demands and dislike peas the rest of her life.

Picture 3: A woman is standing behind a young boy who is seated at a table. She is pointing with a pen to an opened book.

Story 3: Jerry is having trouble with his home work. He works slowly and school work is difficult. Consequently he has much home work every night. Mother is ambitious for her child and rather than have him placed in a group where he will be able to work along happily with other children tries to help him at home. Jerry becomes more discouraged as time goes on.

Picture 4: A boy is seated with an opened book in front of him. He is staring forward into space. In the background is an ephemeral scene of two figures dueling.

Story 4: Raymond loves to read books about pirates and tales of the sea. He is happiest when looking at pictures, reading or dreaming about the stories he has read and the things he will do when he grows up. Raymond continues in this type of recreation rather than the more boisterous which is typical of boys. He becomes a waiter.

Picture 5: A young boy looks up at a woman who is in front of him. She is standing with her hands on her hips.

Story 5: The teacher is having a bit of trouble with John and is scolding him. She is taking a very overbearing attitude and John is bewildered. To begin with, he doesn't quite know what he did to cause the scolding because he has always tried to do his best. This has happened so many times before that he has finally come to the decision, "Oh, what's the use?" "She doesn't know how we boys felt about things." The teacher goes through the rest of the year wondering why she can't get responses from John.

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Picture 6: A very small boy with a solemn expression faces outward. A young woman faces him with her head and eyes lowered.

Story 6: Jay is looking at his dog. The dog was hit by a car in the road. Spot meant so much to Jay and the loss is hard to understand. Mother stands closely by to give sympathy when needed.

Picture 7: Two smiling wind-blown figures face the left margin of the picture. A boy is at the girl's right.

Story 7: Jean and Joan are twins. Jean has just come from swimming and has something very interesting to tell her sister. While they watch some of their friends.

Picture 8: A boy is seated with his chin resting in his hand. His other arm rests on his knee. He is looking upward at some hands. There are seven hands surrounding him in the picture.

Story 8: Don is trapped. It seems everyone is pointing a finger at him or stopping everything he tries to do. What to do? Don has quite a good bit of common sense so he sits down and thinks through the situation. Is every boy picked on? Do all grown ups say no to everything a boy does? He decided he must stand on his own feet and not let anything get him down.

Analysis

Devaluation. Eleanor feels herself to be of little value. In Stories 2, 3, 5, and 8, the characters with whom she identifies are frustrated, unhappy, and failing to meet adult standards. In Story 3 she expresses the child's feeling of discouragement in the face of adult expectation.

Dependency. Dependency is shown in Story 1 where the children try to have the father answer all the questions. In Story 3 the child is described as having help; and help is ready in Story 6. Although she says, in Story 8, the boy must stand on his own feet, she does not describe him as doing it or how he will do it.

Anxiety. Anxiety is evident in all the stories. In Story 2 the child is afraid to express her feeling and must comply with the mother's demands. In 5 she describes the child as "bewildered," and the story presents the fact that she is confused and anxious about people in authority over her. In Story 8 she suspects everyone as interfering with her and considers herself to be "picked on."

Conflict. The predominant conflicts are centered around a feeling of devaluation, anxiety, and resentment against outside forces in her environment. Associated with these feelings is a feeling of isolation and of living much within herself. This view of herself and the environment would interfere with feelings and expressions of sexuality. Picture 7 is usually seen by people, reasonably well adjusted sexually, as a heterosexual situation.

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Eleanor sees the picture as representing two girls coming from swimming and thus cannot describe a boy-girl relationship. Too, this story contains elements of childish curiosity. This shows a conflict over expressions and feelings of sexuality.

In summary, because of devaluation, dependency, anxiety, and conflict, Eleanor cannot show affection in her relationships with others. She cannot feel warmly toward another person nor can she be aware of feeling in other people. Her own characteristics of devaluation and dependency interfere with interaction and exchange of feelings.

It was shown in the observational data that Eleanor was not supportive in her contact with children. Appeals for help or close contact from children were to no avail. Her reaction to situations which called for close contact with children were of a negative sort. She rebuffed children who appealed to her and whose behavior showed dependency and non-achievement. She did not try to see the cause of the children's behavior but projected her own diagnosis of the difficulty to the children. An observer on the research staff recorded the following exchange:

The children put on their coats, etc., and left the room. However, three girls remained behind.

Eleanor: "Come on, girls, I want you to go outside."

One went to get her coat and soon left the room; one (Beth) sat at her desk, and one (Frances) went to the bookcase, took out a jigsaw puzzle and started to work it on the floor.

Eleanor: "Come on, Beth, I want you to go outside. It will be good for you to get some fresh air."

Beth: "No, I'm not going out. I'm gonna work arithmetic."

Frances: "She'll never get done anyhow. I don't think she's even begun. I can't work this puzzle; it's too hard."

Eleanor: "Sure you can work it. You just don't want to try."

Finding evidence of self-devaluation, dependency, anxiety, and conflict in Eleanor's personality does not necessarily mean maladjustment or inadequacy in her affective behavioral exchanges, but rather it is the extent of these characteristics that is significant. Probably no one is completely secure, independent, or free from anxiety and conflict. It is only when these factors are present to the extent that they interfere in interpersonal relationships that they are to be considered as significant in concern for the welfare of children.

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THE RELATION OF PHYSICAL DISABILITY TO FEAR AND GUILT FEELINGS¹

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The degree to which fear and anxiety serve as motivating and inhibiting factors to achievement or adjustment has been recognized for some time. Fear and anxiety are emotions which in themselves are extraordinarily complex and whose impact on the adjustment of the individual is great. Studies are available which indicate that the emotional characteristics of children who have physical impairments do not differ greatly on a quantitative basis from children who are physically normal and of the same age and general socio-economic background (3). On the other hand, it has been observed that of eight aspects of affect which were evaluated in a recent study, the factor of fear stood out from the others as an area in which statistically significant differences were obtained. Fear, or the presence of a need to be free from feelings of fear, was noticed as an important barrier to the successful adjustment of the children included in the study, both crippled and non-crippled children. Similar observations have been made by other authors (1, 6, 7). The study recently completed by Henri indicates that the anxiety demonstrated by crippled children in opposition to that shown by non-crippled children was one of the outstanding characteristics in an evaluation of the adjustment of the two groups of subjects. There was a statistically significant difference in the number of responses to projective test materials which indicated basic anxieties on the part of crippled children as opposed to non-crippled children. Findings of a generally similar nature have likewise been observed by other research workers in the field (8, 9).

While the presence of fear as a factor in the adjustment of children has been established, the similarity or dissimilarity of the fears of crippled children to those of non-handicapped children is unknown. Further, the degree to which the handicap itself constitutes the basis for fears and anxieties on the part of handicapped children, and the degree to which the handicap is a factor in the process of reaching goals and satisfying wishes is unknown.

THE METHOD

The present study is a part of a larger investigation, some results of which have been presented earlier (2). The method used was previously elaborated extensively and will herein only briefly be outlined.

A Projective Sentence Completion Test, developed by the author, was administered to 264 physically handicapped children in six centers in the

¹ Appreciation is extended to Earl X. Freed, Research Assistant, who assumed a major responsibility in the tabulation of the data for the study.

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United States and to a similar group of non-handicapped adolescent children who resided in communities whose social and economic background was in large measure comparable to the former group.² The Projective Sentence Completion Test consisted of forty-five sentences geared to evaluate the self-concepts of adolescent children in several areas of life adjustment, i.e., (a) family, (b) society, (c) goals and wishes, including attitudes toward thwarting situations, (d) fear and guilt situations, and (e) other persons with physical defects. Analysis of the first two areas mentioned above has already been made (2); the present paper will deal with section (d) of the Projective Sentence Completion Test.

The responses to the uncompleted sentences were assigned to categories dependent upon the significant feelings expressed by the children. A reliability check of the distribution was made by competent judges, and a high reliability for the procedure was obtained. Following the categorization of responses, standard errors (4), critical ratios, and associated probability values (5) for the differences between percentages were computed.

The physically handicapped children were characterized by twenty-four different medical diagnoses. The largest number of children was handicapped by three physical disabilities, i.e., cardiac conditions, poliomyelitis, and cerebral palsy. No deaf, hard of hearing, known mentally retarded, or visually impaired children were included in the groups. Each of the subjects in the group of physically handicapped children was matched according to age and sex with a child who was physically normal.

RESULTS

The Projective Sentence Completion Test included a number of sentences which were sufficiently structured to cause the children to think in terms of their fears, yet at the same time permitting sufficient latitude to exploit the essential elements and advantages of the projective technique. The four sentences which particularly sampled fears were:

I'm afraid of . . .

I wish I could stop being afraid of . . .

My fears sometimes make me . . .

I am worried about . . .

Through the above open-end sentences the author has tried to obtain a statement of the children's fears, their wishes concerning their fears, and their reactions to feared objects.

As there is a wide range of responses to the items concerned with fear

²The author is indebted to the following persons who cooperated in gathering the data: Herman Goldberg, Rochester, N.Y.; Virginia Thornton, Buffalo, N.Y.; Grace Wolfenden, Detroit, Michigan; Bess R. Johnson, Des Moines, Iowa; Dorothy Pasche, Toledo, Ohio; Laura Sutter, Miami, Florida; Sidney L. MacArthur, Newark, N.Y., and Gertrude Booth and Mary Lenox, Binghamton, N.Y.

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TABLE I

ANALYSIS OF RESPONSES OF HANDICAPPED AND NON-HANDICAPPED
ADOLESCENTS TO SENTENCES ELICITING
SPECIFIC FEAR SITUATIONS

UNCOMPLETED SENTENCES						
<i>I'm afraid of . . .</i>				<i>I wish I could stop being afraid of . . .</i>		
Response	Experi- mental Group Per Cent	Control Group Per Cent	p	Experi- mental Group Per Cent	Control Group Per Cent	p
	Response	Response		Response	Response	
my handicap	7.3	...	.00001	5.1	...	.001
vocation	0.7	0.7	..	0.3	...	.61
education	9.0	11.5	.34	6.2	8.8	.24
recreation	0.7	...	.25	1.0	...	.09
hospitals	5.0	...	.001	3.4	...	.001
family	4.0	1.8	.14	5.8	3.3	.14
animals	22.6	19.4	.36	5.1	13.3	.53
people	6.6	9.7	.19	15.7	24.0	.01
accidents	2.0	1.8	.88	0.7	1.1	.96
vehicles	1.0	...	.09	2.0	...	.01
water	2.3	1.8	.68	1.0	1.4	.96
high places	2.3	1.8	.68	2.0	0.7	.89
neutral	6.0	4.7	.51	5.7	5.5	.92
nothing	7.6	10.0	.34	2.4	2.5	.93
storm	1.3	2.1	.48	1.0	2.2	.27
being alone in dark . .	6.0	10.8	.04	5.8	11.3	.02
fire	2.0	1.4	.61	1.0	1.1	.90
aggression	1.6	1.4	.84	1.3	1.7	.71
ommission	2.0	...	.02	7.5	6.2	.54
dreams	0.7	...	.25	0.7	...	.24
being talked about or looked at	0.7	...	.25	1.7	0.3	.16
deep places	0.7	...	.25	...	...	..
war	1.0	2.8	.14	...	1.1	.07
disease	0.7	0.3	.68	0.7	...	.24
the unknown	1.6	...	.07	0.3	...	.62
speaking before others .	...	2.9	.008	1.7	4.4	.06
the future . . . . .	...	0.7	.31	1.7	0.3	.16
not being a success . .	...	0.7	.31	...	...	..
trains . . . . .	...	1.0	.14	...	...	..
misbehaving . . . . .	...	2.8	.01	...	...	..
myself	0.3	1.1	.24
death	0.7	2.2	.06
superstitions	1.1	.07
my behavior	1.8	.04
everything	1.1	.07

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and guilt, and since the majority of the responses are essentially one-word answers, it has appeared more practical to tabulate the data than to state the results for individual categories. This has been done in the data which follow by imposing certain breakdowns upon the data.

In Table I the reader will find a comparison of the responses to the uncompleted sentences, *I am afraid of . . .* and *I wish I could stop being afraid of . . .* The first striking fact to be observed from this data is the strong fear of the handicapped group of their handicap. This is seen in the responses ". . . handicap," ". . . hospital," and ". . . disease." Other responses which are probably relevant to these in terms of fear of getting hurt are: "recreation," "accident," "vehicle," "aggression." The response of "being looked at" or "talked about" is likewise directly related to the handicap. The strong need for conformity and accord with the demands of society is seen in the responses of the non-handicapped children, i.e., *I am afraid of* "family," "people," "being alone in the dark," "war," "speaking before others," and "misbehaving." Although many of these responses appear in the handicapped children's completions, a greater percentage is found in those of the non-handicapped group.

Further evidence of the immature and withdrawing type of adjustment which is made by the handicapped group is afforded by the responses, "dreams," the "unknown." The regressive type of adjustment characterizing the handicapped children is substantiated by the fact that the handicapped group gives larger percentages of those responses which we would expect from younger children. These include "animals," "water," "high places," and "fire." On the other hand, there is a restatement of the concern of the non-handicapped children which was seen in other aspects of this study with "education," the "future," and "success."

It is most interesting to examine the possible dynamic differences produced by the different wording and interpretation of the two sentences. In one sentence there exists a plain statement of fact; in the other a wish is involved, a wish to stop a definite threat. We would expect that responses threatening to the self would be suppressed when the individual was confronted with the statement item. However, when the individual is given the task of completing the wish sentence, it is less threatening to him to state that of which he is afraid because partial relief is afforded him by the wish which, in a sense, reduced the threat.

If we accept this theoretical formulation, then, it is interesting to note that in 15 out of 23 categories of responses which are common to both of the items, percentages given per response by the handicapped group to the wish item are less than those given to the fear statement item. In two categories the percentages remain the same; in six, the percentages increase in response to the wish item. We can explain the decrease in percentage in the fifteen responses as due to the increase in the six responses which necessitated a reduction in other responses. Of the six items, one refers to recreation, and the decrease is only .3 per cent. Others are "omission" and

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TABLE II
ANALYSIS OF RESPONSES OF HANDICAPPED AND NON-HANDICAPPED
ADOLESCENTS TO SENTENCES ELICITING
GUILT FEELINGS

Response	UNCOMPLETED SENTENCES					
	<i>I feel most concerned about . . .</i>			<i>I am worried about . . .</i>		
	Experi- mental Group	Control Group	<i>p</i>	Experi- mental Group	Control Group	<i>p</i>
	Per Cent Response	Per Cent Response		Per Cent Response	Per Cent Response	
family	24.4	26.5	.56	14.8	13.9	.76
omission	4.8	2.3	.10	5.5	4.0	.41
neutral	3.7	6.7	.11	5.1	4.0	.10
handicapped people . . .	1.7	0.6	.27	...	...	..
			less than			
my handicap	5.5	0.0	.0001	8.7	0.0	.000001
people	12.6	8.7	.13	3.5	5.1	.35
education	20.1	22.8	.42	24.9	39.1	.0001
my health	2.4	1.0	.16	0.0	1.4	.02
the future	5.5	7.0	.46	7.4	7.3	.96
my appearance	2.4	3.0	.64	1.3	1.4	.90
recreation	4.8	6.0	.53	2.2	0.7	.16
vocation	2.0	2.0	.00	0.0	2.9	.003
animals	2.0	1.0	.31	1.3	0.7	.48
my home	1.3	0.0	.03	0.0	0.7	.24
myself	3.1	3.7	.58	0.6	0.3	.72
the world	0.0	1.3	.03	0.6	2.5	.10
music	0.0	2.3	.003	...	...	..
my behavior	2.0	1.6	.72	...	...	..
being a success	0.0	1.0	.09	0.6	1.4	.34
money	0.0	0.6	.31	0.6	1.8	.27
disease . . . . .	...	...	..	0.6	0.0	.32
hospitals . . . . .	...	...	..	1.3	0.0	.03
nothing . . . . .	...	...	..	4.8	2.9	.22
many things . . . . .	...	...	..	0.0	1.9	.05
my personality . . . . .	...	...	..	0.0	1.1	.07

"vehicles." However, the remaining three show greater increases and refer to interpersonal relationships. These are "being looked at" or "talked about," "people," and "family." What we may conclude, therefore, is that the handicapped group has a great fear of their position in interpersonal relationships, perhaps as a result of their lack of social techniques (1). Consequently, they entertain a wish to correct this situation.

With reference to the wish, it is interesting to note five responses which

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do not appear as statements but only as a wish. The greater percentages of these responses appear in the non-handicapped protocols. The responses are "death," "superstition," "myself," "my behavior," and "everything." It is not too difficult to see that these are responses which, if given in a statement, would be most threatening to the individual.

In Table II there is listed the responses and statistical data derived from the sentences: *I feel most concerned about . . .* and *I am worried about . . .* The great concern of the handicapped group with their handicap is seen in the responses, "handicap," "disease," "health," "hospital," and "handicapped people." In contradistinction to the fear responses, the major areas of concern and worry are "family" and "education." Interpersonal relations are also important but do not constitute as large a percentage of the total responses as they did in the fear items. Responses included here are "people," "my behavior," "the world." There seems to be a great concern with the self as evidenced by the responses, "my appearance," "myself," "my personality." Emotional maturity is indicated by such categories as "vocation" and "being a success."

The close relationship between guilt and fear has been recognized for some time and has been observed in crippled children (1). Four sentences were structured to sample the feelings of guilt which might be held by the two groups of children. The first of these reads: *At times I have felt ashamed of . . .* "At times I have felt ashamed of my handicap" is found in 7.7 per cent of the responses of the handicapped; in 0.3 per cent of the non-handicapped ($p, .00006$). It is interesting to note that in addition to other responses which can be traced to the handicap, there also results the feeling of guilt at having a handicap.

The self seems to be that to which the most guilt is attached with both groups of children. "At times I have felt ashamed of myself" appears in 23.9 per cent of the completions of the handicapped, in 36.6 per cent of the non-handicapped ($p, .001$); ". . . ashamed of my behavior" is found stated by 22.8 per cent of the handicapped, 26.7 per cent of the non-handicapped ($p, .30$); ". . . ashamed of my personality" in 5.6 per cent of the handicapped, and in 1.0 per cent of the non-handicapped ($p, .004$); and "ashamed of my appearance" is found in 7.5 per cent of the handicapped and in 10.2 per cent of the non-handicapped ($p, .08$). It should be noted that the responses referring to being ashamed of the handicap are essentially similar to these responses indicating shame of the self.

Again, interpersonal relations seem to be an important area for both groups. For the handicapped group, the feeling concerning behavior toward members of the family, and especially the parents, is very strong. "At times I have felt ashamed of my ill treatment of my family" is found in 6.3 per cent of the completions of the handicapped and 1.8 per cent of the non-handicapped ($p, .008$); ". . . ashamed of my family" appears in 4.5 per cent of the handicapped and 5.8 per cent of the non-handicapped ($p, .50$); and ". . . ashamed of people" occurs in 3.6 per cent of the handi-

capped and 7.6 per cent of the non-handicapped ($p, .04$). In the sentence, *I would do anything to forget the time I . . .*, the author is trying to ascertain what events in the children's lives they considered to be real traumas. The responses of the handicapped group are predominantly concerned with handicaps and general state of health. Their handicap has produced tunnel vision in their perceptions.

Direct references to the handicap appear in 7.5 per cent of the responses of the handicapped and in none of the non-handicapped ($p, .00001$); references to an injury constitute 13.2 per cent of the handicapped responses and 9.3 per cent of the non-handicapped ($p, .15$); allusions to being sick are found in 8.7 per cent of the handicapped and 3.7 per cent of the non-handicapped ($p, .02$); responses referring to time spent in the hospital are found in 7.1 per cent of the handicapped and in 1.5 per cent of the non-handicapped ($p, .002$); references to accidents constitute 6.8 per cent of the handicapped and 20.4 per cent of the non-handicapped (p , less than .00001).

There are no outstanding differences between the two groups to the sentence, *My fears sometimes make me . . .* Rather we see that they are essentially similar in that the general response to fear is primarily one of withdrawal into the self. Such responses as "afraid," "nervous," "cry," "worry," "unhappy," "ashamed," "feel bad," "regress," "sick," "sad," "dream," "stay home," "depress," "irritable," "upset," and "shy," all seem to indicate an attempted suppression of the fear response. The response emerges overtly in a few cases as seen in the responses of "angry" and "do things."

The last sentence in this group began, *When I do or think something which I know is wrong, I . . .* These responses are essentially the reactions to feelings of guilt. The outstanding characteristic of the differential responses observed here is that the handicapped group appear very anxious to conform to society. This may well be a result of their fear of losing the love of those about them. Substantiation of the need for conformity is seen in the responses, "I correct for what I've done," "I don't do it," "I stop and think," "I am worried," "I undo it," "I do it right," "I do it better next time," "I'm ashamed," "I change it," "I make up for it," "I think of an alternative," "I don't do it again," "I make it right," and "I do what's best."

Thus, it is seen that the children of the handicapped group try not to do things which they know are wrong, or if they do them, they try to atone for what they have done in terms of a counteraction activity. The non-handicapped group, on the other hand, shows fewer such responses and also gives responses which indicate that once they have done the deed, they may feel self-critical and guilty about it, but they do not take as much positive action as the handicapped children do to make up for what they have done. This is observed in such responses as "I get angry," "I'm afraid," "I'm ashamed," "I feel guilty," "I feel bad," "I try to forget it,"

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"I turn to religion," "I feel sorry," "I withdraw," "I confess," "I don't feel bad," "I can't forget it," "I make excuses," and "I become nervous."

In general, then, the non-handicapped child feels that he may do such things and reproach himself and still not fear a loss of love whereas the handicapped child, being insecure in his interpersonal relations, has to make every effort to make up for what he has done so that his already shaky status will not be further disturbed.

SUMMARY

It has been noted earlier that fear and anxiety serve as motivating and inhibiting factors to healthy social, emotional, and academic adjustment and achievement. The results of the portion of a study which have been reported here illustrate well the fact that children with various types of orthopedic, cardiac, and neurological handicaps see themselves as having more fears and more feelings of guilt than do children of normal physical characteristics. There is little question but that the presence of such emotions and feelings has direct impact on the less satisfactory social adjustment which the handicapped children feel that they are making and which has been reported elsewhere (2).

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THE USE OF A CONTROLLED PLAY SITUATION IN DETERMINING CERTAIN EFFECTS OF MATERNAL ATTITUDES ON CHILDREN

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INTRODUCTION

The use of play techniques to aid the adult in gaining insight into the child's world has come to have an established place in the psychological clinic. Although it has long been recognized that children express their feelings in play activity, the use of play as a special technique in the study and treatment of children was developed in the field of child psychoanalysis. Play techniques were found useful in gaining an understanding of children's difficulties as well as affording a means of expression which was sometimes helpful in solving problems.

In clinical diagnosis and investigation of the personality development in young children, play techniques, like other projective methods, are designed to elicit a projection of the child's inner world on a plastic field which he organizes, interprets, and reacts to affectively. The significance of any particular play activity is determined by the total play configuration of the subject, taking into account the immediately preceding and subsequent kinds of activities. Of great importance is the quality and intensity of affect expressed during the play.

Play techniques can be used either as a free spontaneous method or a controlled method in which a specific situation is set up. In the free method the child is presented a variety of dolls from which he makes his own selections and spontaneously chooses his own type of play. In a controlled play situation, however, the examiner selects certain dolls representing important life figures and creates a life situation for the child's response.

THE PRESENT STUDY

The purpose of the study on which this paper is based was primarily to acquire knowledge and skill in preparing, using, and evaluating the use of controlled play situations in experiments with children and secondarily, to demonstrate the usefulness of the controlled play situation in determining the effect of maternal attitudes, namely, varying degrees of overprotection and rejection, on the child's behavior.

* This article is based on a thesis written while the author was at the University of Cincinnati.

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The subjects for this study were twenty children, four and five years old.

Ten of the children lived in their own homes, and attended a private nursery school. The other ten children were evenly divided between an orphanage and an emergency placement center, a temporary home for deserted children pending placement in foster homes. For the latter group of ten children, parental rejection is inferred, although wherever possible the validity of this inference was evaluated from case history.

EVALUATION OF MOTHERS OF THE NURSERY SCHOOL GROUP

The ten nursery school children represented a rather select group whose parents are chiefly from a professional and semi-professional rank. The mother of each child was interviewed and questioned concerning her relationships, methods of training, and general behavior in regard to the child to be studied. The experimenter had had some contact with the mothers when they called for their children each day at the nursery school where she was employed and knew something of their relationship with their children. In addition to this, each mother was interviewed and a set of specific statements was presented to her to be answered. A general explanation was given the mothers that this was a study to compare methods of child rearing of mothers of nursery school children with those of other groups of children and that the results were not to be used individually or personally but as an attempt to find some characteristic pertaining to the mothers as a group.

It was at once noticeable that the mothers of the nursery school children showed a great range in their attitudes—all presented some factors of overprotection with a wide variability from extreme overprotection in some phases of mother-child relationships to pronounced instances of rejection. It was decided to weigh all the material obtained from the mothers and to rate and list these in order of degree with qualifications. The head of the nursery school had had quite a bit of contact with the mothers and was asked to describe and classify them in regard to such factors as rejection, overprotection, dominance, indulgence, neglect, and discipline. The meaning of the terms was discussed so that there would be some consistency in regard to the summaries.

At first glance the casual observer might tend to classify all of the nursery school group (in contrast to the institutional group) as overprotected, since they are provided with every physical necessity and are in most instances materially indulged. A closer examination of the real attitudes exhibited by the mothers in their daily contact and relationship with their children, however, presents illuminating and revealing contradictory conditions. The writer feels that a rigid classification as to overprotection or rejection eliminates the finer nuances of attitudes involved in mother-child relationships. It seems to be rather the subtle combination of attitudes and

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ambivalence in the feelings of parents towards their children that is the essential factor to be studied; e.g., one parent may be dominating in a loving, protective, or helpful manner, while another may be dominating through a rejecting, hostile, or controlling attitude. Any general classification, therefore, seems inadequate in studying what effects the maternal attitudes have on the child. Consequently, an attempt was made to use questionnaires, ratings, and studies that have been done on maternal attitudes as a point of reference and then arbitrarily to analyze further the results of the present survey in regard to the more underlying but characteristic attitudes.

The data concerning the mothers of the nursery school children were then compiled, summarized, and analyzed. The results are presented later in connection with the play procedure record of each child to whom they refer.

THE EXPERIMENTAL SITUATION AND PROCEDURE

The equipment for the controlled play situation consisted of a set of "doll house" dolls. These are small plastic dolls which will stand and can be bent into desired positions. They represented a father, mother, baby, and boy or girl depending on the sex of the child to be observed. Each was dressed in appropriate removable costume except for underwear which could not be removed, to the great consternation of some of the children. The dolls ranged from two to four and a quarter inches in height. It was decided to keep the material as simple as possible and therefore no other toys were used.

The nursery school children were familiar with the experimenter as a teacher in the school. The controlled situation experiments were conducted after the information had been obtained from the mothers but before any evaluation had been attempted with the intention of counter-balancing as much as possible any preconceived ideas as to what the results would be in either the mother's attitude or the child's reactions.

Several pre-experiment interviews were conducted to establish and adjust the controlled situations. These were followed by five more trials with children other than those to be used for the final experiment in order that the experimenter could become familiar with the technique and procedure. Each child in the entire study was observed in two twenty minute sessions, unless a strong desire to stop was expressed, on consecutive days, at approximately the same time in the morning.

The nursery school children were approached during their play in the school and asked if they would like to come with the experimenter to see some new dolls and to play with them. Note was made as to the absorption and interest the child was showing in his activity and the attitude and reaction of the child to the invitation to change his activity. The child accom-

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panied the experimenter to a room containing a table and chair at one side of a rather bare room. The child was handed the open box containing the four dolls with some remark such as "How do you like these dolls?" "You may play with them and make them do and say whatever you like." The child was allowed a short time to accustom himself to the dolls and an opportunity for spontaneous identifications. If no remarks were elicited, the experimenter encouraged and helped in pointing out that perhaps it could be a family. The child was allowed an opportunity to go on from there and when necessary the father, mother, etc., were pointed out as possible members of a family. An attempt was made to encourage the child to play with the dolls as he chose. When no play was expressed by the child the controlled play situations were introduced. In those cases where spontaneous play took place the controlled situation was interjected when lulls occurred in the play or at some point where the situation seemed appropriate to the play being carried on.

The specific controlled situations consisted of 1) "If the child is busy playing and mother stops him (her) and says it is time to go to bed—what does the child say, feel, etc.?" to encourage as much of a response as possible without arousing undue anxiety. 2) "The family are at lunch and there is something the child does not like." (An attempt was made to find out beforehand some particular food which the child did not care for.) "Did he eat it? What does mother say? What happens?" 3) The child is having fun playing and accidentally knocks over a dish which falls to the floor and breaks. Just then mother comes in and sees it. What happens?" 4) "Mother is feeding the baby and the child comes in and sees them. How does he feel? What does he say and do?"

In each instance the experimenter encouraged the child to manipulate the dolls in the desired actions, doing it herself only when necessary. An account was kept of the child's behavior, attitude, activity, and verbalization. It was impossible at times to keep the child's play stimulated and record verbatim. Some children were so productive that everything could not be recorded immediately, and several were very difficult to understand.

The conditions regarding the group of rejected children were maintained as similarly as possible. The child was introduced to the experimenter by the person in charge as she was a complete stranger in each of these instances. This presented one of several variable conditions in regard to the two groups. As before, the experimenter sat at a table and the child was allowed to play on the floor or at the table as he chose. A slightly longer time to become acquainted was allowed with these children before presenting the dolls. The same morning hours, length of time, and consecutive day plan were adhered to. The entire experimental period program was identical in both groups.

The sessions for the first and second days were essentially a continuation of one another and in no case was any decided difference noticed other than further development of freedom that was progressive from the begin-

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ning of the first day. The children were able in every case to proceed as though no interruption had occurred. Several children spontaneously set up situations on the second day similar to those which had been introduced on the previous one.

RESULTS

In order to interpret the results of the doll play procedures the records were read and analyzed in regard to an outline set forth by Murphy (2). This material revealed an abundance of information concerning each individual child and a relationship to his problems and would be useful in correlation with his history and actual behavior. However, the results did not lend themselves to classification and distinction between the groups which showed total rejection and that in which various attitudes prevailed.

Another breakdown was made in regard to 1) type and manner of free play (realistic, fantasy, consecutive, scattered), 2) ways of meeting the controlled situation (direct, evasive, denial, and attempt to cease play), 3) expression of hostility in response to frustration and the amount of anxiety precipitated.

A final analysis of the results of the doll play procedures was then compiled into a chart on which the reactions shown by each child were checked. The general attitude of the child to the total procedure (his willingness to participate and the intensity and quality of feelings he displayed) was classified as withdrawn, outgoing, or anxious. The other categories on the chart were set up to include the material expressed by overt actions, verbalization, or a combination of both. In addition to the significant areas in early childhood development, namely, the oral, anal, and oedipal periods, there was vivid material, overtly shown, which expressed hostility, parental preference, depressive attitudes, and self-punishment. When the latter feeling was clearly demonstrated as physical injury to the child himself, it was classified separately. For the purpose of a comparison of the children in regard to groups, those at E.R.C. and the orphanage are referred to as overtly rejected since they were all separated from their parents. The nursery school children, on the other hand, were living with mothers who expressed varying degrees of ambivalence.

From the results on the chart it is noticeable that the overtly rejected (institutional) children are much more responsive in regard to overt self-expression than the nursery school children. Child V was the most active of the nursery group in direct expression and is noted as being a fairly consistently indulged boy, and Child I most closely resembles some of the rejected children in the intensity of her activity and is also extremely indulged. It is interesting to note that this is in accord with Levy's finding: "When maternal overprotection is primarily indulgent in character, aggressive traits result. This is so much like the pattern which one expects to follow from

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CHART SHOWING ACTIVITY EXPRESSED BY CHILDREN IN A CONTROLLED PLAY EXPERIMENT

	Emer. Rec. Center					Orphanage					Nursery School									
	A	B	C	D	F	G	H	J	K	L	I	II	III	IV	V	VI	VII	VIII	IX	X
1. <i>Attitude During Play</i>																				
(a) Withdrawn	*		*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
(b) Outgoing																				
(c) Anxious																				
2. <i>Oral Theme</i>																				
(a) Seeking food	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
(b) Oral aggression	*				*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
(c) Statement of loss or desire for affection					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
(d) Demonstration of seeking affection					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
3. <i>Excretory Theme</i>																				
(a) Interest in excretory activity	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
(b) Bed wetting	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
(c) Soiling as aggression	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
4. <i>Washing Activity</i>					*					*					*					
5. <i>Parental Preference by Statement</i>						F	F													
6. <i>Sexual Theme</i>																				
(a) Curiosity (dress-undress)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
(b) Fantasy					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
7. <i>Hostility</i>																				
(a) To mother	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
(b) To father	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
(c) To siblings					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
8. <i>Depressive Attitude</i>					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
9. <i>Self-Punishment</i>	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10. <i>Physical Injury</i>					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

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parental rejection that one wonders whether indulgent maternal overprotection is not actually disguised rejection" (1).

The only child in the rejected group who did not express hostility is noted as coming from a home where "as much love and warmth as was possible under the circumstances" had been shown, while in the nursery school group we find three children, all indulged, who evidence overt expression of hostility. This evidence, together with the preponderance of anxiety shown by the nursery school group lends itself to some interesting speculation. The behavior of the rejected children as a group seems to evidence a contrasting picture to that of the nursery school children in regard to the expression and existence of underlying conflict. These children who have suffered overt rejection are much more aware of the source of their feelings and are more directly and consciously hostile because of this loss, while the children who suffer from ambivalent attitudes are more anxious, insecure, and combatting imaginary opponents. These rejected children are better able to verbalize their feelings as being a result of loss of the parent and to demonstrate their attempt to secure affection. The child who suffers from ambivalent relationships is at a loss to know just where he stands. At one moment he receives everything and feels that he is a lovable, worthwhile person but at the next moment he is dominated or rejected. He is unable to resolve the conflict that inevitably results from his inability to show hostility to a person who has given him so much. Carrying this observation further it might be readily inferred that the overtly rejected children would be more prone to develop delinquent behavior in expression of their hostility; whereas the children subjected to ambivalence would be more confused as to their own inner feelings and therefore have a stronger tendency to develop neurotic symptoms or psychosomatic illness.

One nursery school child, VII, who seemed to be able to enter wholeheartedly into the play readily identifying with the dolls and consistently acting out realistic activities familiar to her own life, without elaboration of fantasy, is rated as having the most accepting and consistent maternal relationship. This same kind of reaction is exhibited in her daily behavior in the nursery school. She is a leader, lively, enthusiastic, and always ready to try something new. Although she conforms to the rules and regulations she is able to express her individuality in acceptable ways.

Child X, who showed a desire to play but revealed fear in playing with the dolls, was very similar to two children at the placement center, namely, B and C, and particularly B. They had the same reluctance and hesitancy and watched the examiner for her reactions and approval, responding to warmth and friendly encouragement. B showed evidence of possibly having been struck by those in authority, and a study of the background of X presents a picture of inconsistent but rather severe methods of discipline and a lack of warmth and understanding from the mother.

A question might be raised as to why the three children in the rejected group gave evidence of depression and catastrophe to themselves while the

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others showed only hostility. One incident which might be noted in regard to this is that two of the children who showed depression also brought Sunday School themes into their play and may therefore have strong guilt reactions to their hostile feelings. Then, too, their demonstrations of hostility were by far the most violent and active of the entire group which may lead to intensity of the guilt aroused. The third child who showed depression indicated strong masturbatory tendencies which were no doubt strongly dealt with by the authorities at the orphanage. It might, therefore, be assumed that these three children had received treatment that would lead to strong reactions of guilt and worthlessness as a result of their feelings and actions.

In the original report on this study, records were presented for each child. Some were written up rather completely while others were somewhat condensed. Since there seemed to be no significant discrepancy between the activity on the two days there was no separation in the summaries which were based on distinguishing the general play from the responses to the controlled situations. By presenting the results in this manner a great deal of interesting information must be neglected due to break in sequence and continuity; however, for the purpose of objective analysis it was necessary that the controlled situation reactions be compiled as a unit. While continuity was maintained when possible, it was necessary to summarize and describe rather than report verbalization *per se*.

For the purpose of this paper one illustrative record has been selected from each of the three groups for presentation.

Subject A: Emergency Placement Center Subject

(a) *Material from the case history.* The home situation has been continuously upsetting and both parents physically and financially unable to care adequately for the children. During the father's service in the army the mother's behavior became "peculiar." When the father returned from the service a home was established but the mother would not care for the children nor clothe them. She was committed to a psychiatric ward and during her stay there the children were with the grandparents. Upon the mother's release the family moved about from place to place until the mother had to be probated to a state hospital. The father requested placement for the children who after a short stay with an aunt were taken to the placement center until foster homes could be found.

(b) *Report from the center.* "The subject is a very appealing five year old girl, responsive and healthy looking. Everyone is quite fond of her, makes a great fuss over her, pets, and spoils her." Sibling—older sister.

(c) *Record of play session.* A entered into the situation with enthusiasm. She readily accepted the dolls and carried on a continuous dramatization of daily activity with verbalization and manipulation. "Here's the man." "I'll let this be the mama." "The baby is a boy." "He goes to sleep, the girl goes

to school." "Here's the daddy—he goes to work." "The girl comes home from school." "Mother says, 'Did you play hookey?' 'No mother.' 'Get washed for dinner'." General play interspersed by the controlled situations progressed vividly and rapidly. A sang gaily and had the dolls dance, go out, return, etc. The dolls were put to bed and the baby had to go to the "toidy." Interest then centered about undressing the dolls. "Does this come off?" Undresses father, mother, and girl. "Don't let your panties come off or I'll spank you." "Gosh!" "Ding-dong." "Time to get up." "I'm getting up mama, don't worry." Daddy gets up and gets dressed while mother stays in bed. Girl helps daddy. On the second day of play the food interest was spontaneously brought out. The girl returns from school and walks on the kitchen table. Mother goes to school and sends the girl home and makes her go to bed because she had been in mother's food. The girl does not want to go to bed but has to and knows when daddy comes home she will get a whipping. (Why?) "He will look in the refrigerator and see that the food is gone." Mother dresses girl and has a hard time fastening the snap so daddy helps. "Where's the bath tub?" Mother and daddy take baths together, the baby and the girl. Washes, dries and dresses daddy and he goes off to work. "Wash! wash! dry! dry!" accompanies each child. Baby goes to bed again and the girl to school. Then mother gets up. "Now I have to wash out the tub," says mother. A then sings while having mother scrub and mop the kitchen. The girl then dances and daddy comes home to dance with her. Daddy sneaks into the kitchen for a banana, mother finds out, mother and daddy fight—A has them hit each other. Baby cries for mother who says, "Me and daddy are fighting." "I'm so mad at you I have to beat you." She takes a bath "before daddy spansks her." Mother forgot to wash out the tub so gets up to do so. The play was terminated by the mother sneaking to the place where the father works but does not want him to know or he will beat her. "She doesn't want him to know I was in the soup." (Who?) "Me—I'm the mother."

When the controlled situation in which the child was told to eat something she did not want was introduced the girl asks, "Mama can I have a cookie if I eat this?" Mother: "No, you'll go to bed if you don't." Girl spits out the spinach, is spanked and sent to bed. Later mother comes in and says, "You've been out of bed and had something to eat." Girl is spanked again. When father comes home mother tells him the story and the girl is spanked again. The baby whines to daddy for something and is given it. Each situation is reacted to in the same manner—mother spansks and when father comes home the child is spanked again. In one instance when questioned A stated that the girl should be spanked. In the situation regarding breaking the dish A spansks the mother and daddy in return. At bedtime "Mother says, 'Go to bed or daddy will spank you'." "The little girl wets the bed—she didn't want to get up."

An analysis of the abundant material supplied by A, so spontaneously elicited and dramatized, presents a wealth of information indicative of the

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tremendous possibilities inherent in such observations of children's play. The child's conception of her world is beautifully presented—her interest in special phases of daily activity, the emphasis on washing, mention of stealing food, punishment from both mother and father, and her identifications with the mother are clearly revealed. Although spanking was accepted as necessary A was also able to express her anger at those who administered it.

Subject G: Orphanage Subject

(a) *Material from the case history.* The mother and father of the subject are divorced. The father visits the child frequently and brings her presents. The mother has shown total rejection of this child but has kept with her an older sister. G was placed in the orphanage by the court and is considered a ward of the state.

(b) *Report from the orphanage.* "She is a sweet little girl."

(c) *Record of play session.* G entered into the situation with smiling eagerness but no spontaneity. She laughed nervously and answered questions willingly but offered no spontaneous remarks until about ten minutes had passed, whereupon she began to verbalize readily in her activity with the dolls. She immediately picked out the father doll and showed a decided preference for him throughout the experiment. She picked up the father, then each doll in turn, holding them with the father, then tossing them back into the box with a hearty laugh. Her principal occupation was making the dolls sit down and stand up, especially in the corners, facing away from them at first and then after the controlled situations, toward them, exemplifying the type of punishment illustrated. She wanted to put the father in her pocket and pointed out that her own father had given her the dress she was wearing.

G reacted to the controlled situations by having the girl stand in the corner and in one instance stated, "Mommy is a bad mommy." "Because she scolded the girl," and made the mother stand in the corner. G insisted that the mother and father should sleep with their feet together after placing them in various positions, "I want them to be together." In response to the situation where the mother feeds the baby, the baby was removed from the mother's arms and placed in a corner while the girl was placed with the father. Since G was the younger of two children, toward the end of the period the situation was reversed and the girl was asked what the baby would do if the mother was giving something to the girl. G responded, "No, give to baby." When questioned as to how the baby felt, "She want to bite her," and picking up the doll pretends to bite—"but mommy makes her stand in the corner." After her initial shyness was overcome each situation was accepted and acted out without display of concern or anxiety but as the normal accepted reaction called for—defying authority and being punished. G shows oral aggression and feelings of rejection in relation to

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the mother. It can be observed that she receives some attention from the father. The observations from the doll play are in keeping with her history.

Subject I: Nursery School Subject

(a) *Maternal attitude.* Ambivalent; overprotecting; dominating—demands high standards of conforming behavior. Indulgent—bribes and caters to child's wishes in order to obtain the desired behavior. Insecure and lacking in self-confidence.

(b) *Observations from nursery school.* I is a quiet four-year-old girl who wears many "do-dads" (pins, jewelry, etc.) to nursery school. She refused to eat during the entire first semester in school as a result of great indulgence at home. She is a severe thumb-sucker, has occasional enuresis, is an only child.

(c) *Record of play session.* I entered into the situation agreeably but more as if complying with a request than with eagerness. Soon, however, she became greatly interested in the play. She handled the dolls for awhile, touching the clothes gently. At first she was reluctant to acknowledge the dolls as a family but after a controlled situation was introduced she went gaily ahead on her own initiative. "Baby waves good-bye to daddy." "He's walking away." "Now he's at work." "Now watch daddy come home." She then stood the girl, baby, and mother together. "I won't tell you what they're doing." I pulled at the girl's dress; "She don't have no dress." When told she could take it off she did so and wanted to remove the panties also. The mother was undressed. "I'm going to undress them all." There was some hesitation before undressing the father and then the decision, "Now I'll undress daddy," followed immediately by, "Now I'll dress them again." At this point she made reference to the pencils on the experimenter's desk saying, "I have lots of pencils at home and won't give them up." Her essential occupation from then on was characterized by activity with the father and return to the pencils and the writing of the examiner. The father was undressed and bent into knots. "I ate your pencils up." Takes a pencil from the desk, "Now your pencil's gone." "Man says stop—you can't write that." The same procedure was carried on on the second day with even more intensity. The father was undressed and dressed several times, bent into knots and used to try to prevent the examiner from writing. "Can't write any further." When asked what would happen if the writing was continued I stated, "He'll kill you." "Here's a wolf walking," pushing the examiner's hands with the father and then the baby doll while making growling sounds. She then was willing to dress the father and stop the play. Her activity with the father at times was a forceful pounding on the table with the father's legs bent up into the air.

The response to the controlled situations was mostly a growling and refusal to verbalize directly or to act out any feelings except when the baby was being fed. Here the girl at first sat down to watch. "She likes to see

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them," but when asked if the girl did not want anything she said, "Yes, she'll get her bottle too," and proceeded to pretend to drink from a bottle herself. I shows her excessive indulgence at the oral level. Her only area of hostility is brought out at the oedipal level where she meets real frustration.

A study of the record of Subject I reveals a picture of the intensity of the reactions of a child who has been greatly indulged when finally confronted by a situation in which her wishes cannot be granted, namely, her extreme feelings about her father. By not having had an opportunity to build up tolerance to frustrating situations through meeting them at each successive stage with understanding help and acceptance, the effect is much stronger when the situation does occur.

DISCUSSION

A controlled play situation experiment was conducted with ten four- and five-year-old children from a private nursery school, five children from an emergency placement center, and five from an orphanage, all of comparable age, in order to determine the possibilities of using such a procedure to study the effects of maternal attitudes on children.

Since this piece of research was primarily to serve as a learning experience in the use of doll play experiments and as an investigation of the possibilities of using such experiments in determining the effects of maternal attitudes, the concluding of definite effects was neither specifically sought nor anticipated. Nevertheless, an attempt was made to find some characteristics which might be distinguished in the play sessions of the children which related to the specific maternal attitudes to which each had been subjected.

The experiments, as conducted, proved to be sources of a wealth of information regarding children and particularly the problems and reactions of the individual child. The children of each group were seen to show a great variety of reactions and play themes. Since the children are from such widely divergent environments it is interesting to note that the themes of preoccupation and manner of play are not peculiar to any group but an individual matter based, perhaps, on specific handling of problems at certain periods of child training and other factors in the environment. The assumption might also be made that the specific maternal attitude does not necessitate or call forth a predictable behavior syndrome. The rejected child might act out his hostile impulses or, on the other hand, could inhibit them entirely and become shy and docile depending on other factors involved. However, the withdrawn, inhibited child shows anxiety when feelings are aroused and escape is impossible.

CONCLUSIONS

1. Doll play experiments bring forth patterns and information indicative of the environment and attitudes to which a child has been subjected and

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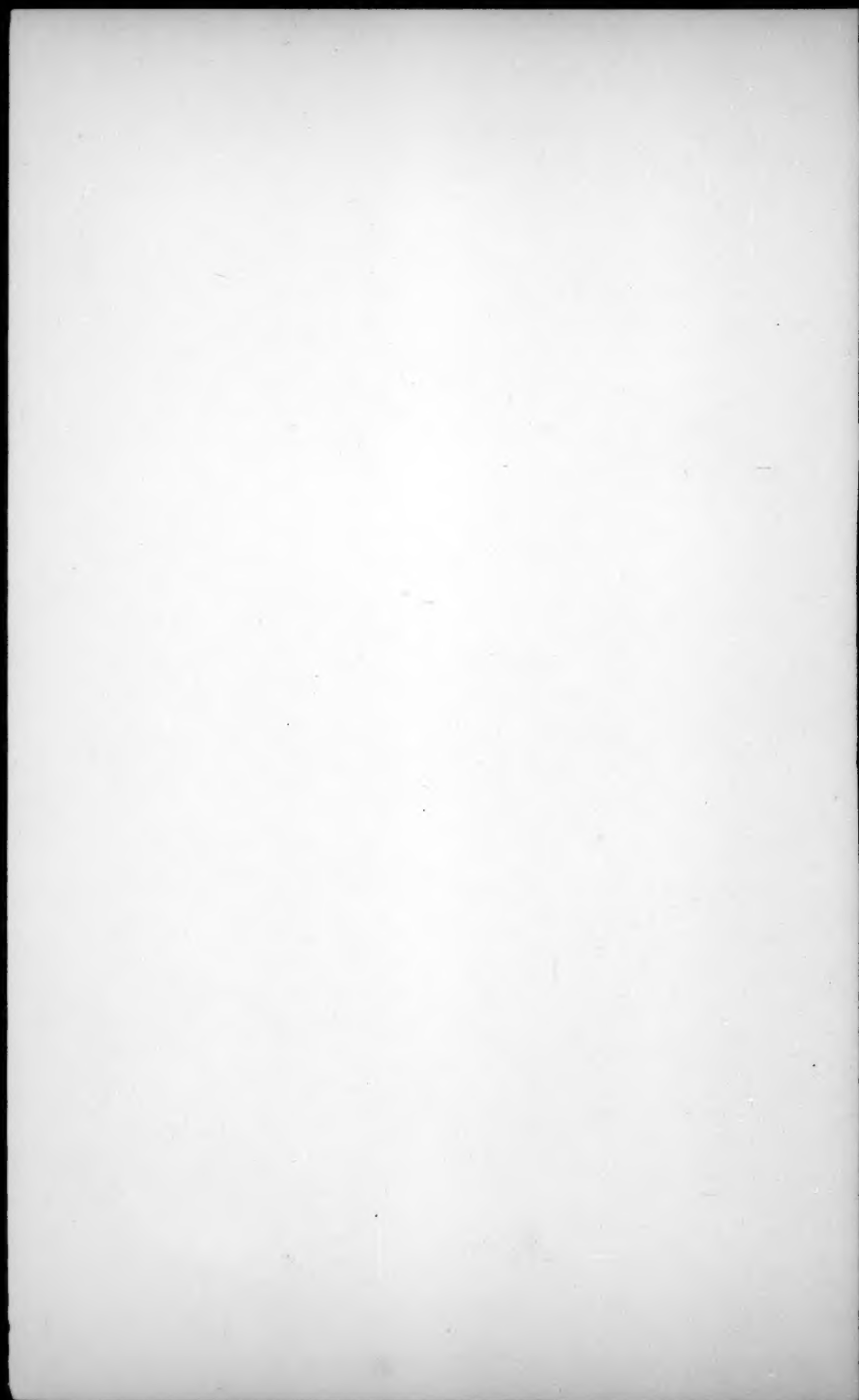
are applicable to the studies concerning the effects of early life circumstances and their meaning to the child.

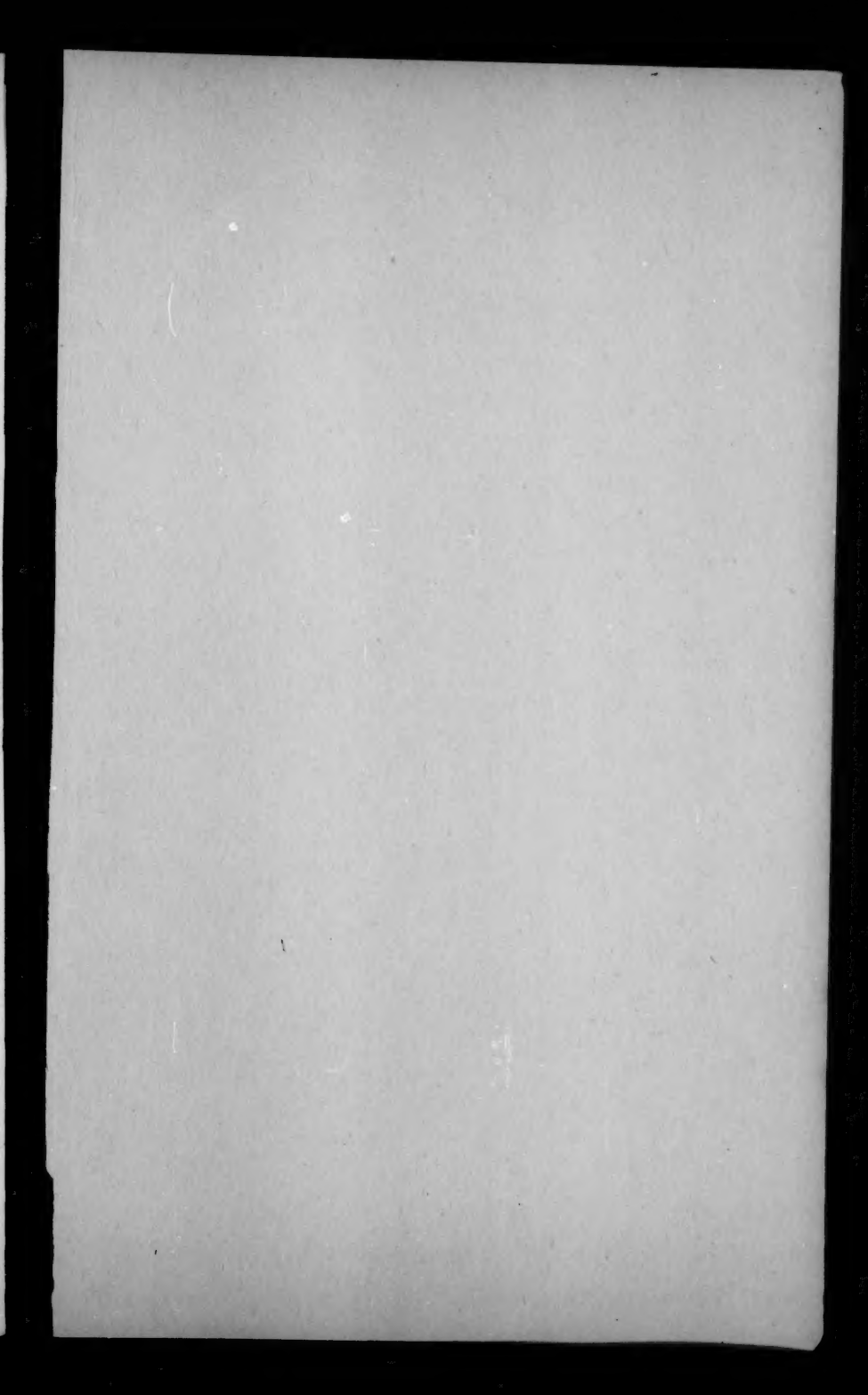
2. Within the scope of the present study in regard to certain effects of maternal attitudes, it can be stated that totally rejected (institutional) children exhibit more overt expression of antisocial and hostile behavior with less inhibitions and anxiety than those living with their parents and possibly subjected to more ambivalent attitudes.

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